APPENDIX A

Sulfolane Synonyms List

- Page Intentionally Left Blank -

- 1,1-Dioxidetetrahydrothiofuran
- 1,1-Dioxidetetrahydrothiophene
- 1,1-Dioxidetetrahydrothiophene
- 1,1-Dioxothiolan
- 2,3,4,5-Tetrahydrothiophene-1,1-dioxide
- Bondelane A
- Bondolane A
- Cyclic tetramethylene sulfone
- Cyclotetramethylene sulfone
- Dihydrobutadiene sulfone
- Dihydrobutadiene sulphone
- Dioxothiolan
- Sulfalone
- Sulfolan
- Sulpholane
- Sulphoxaline
- Tetrahydrothiofen-1,1-dioxid [Czech]
- Tetrahydrothiophene 1-dioxide
- Tetrahydrothiophene dioxide
- Tetrahydrothiophene, 1,1-dioxide
- Tetramethylene sulfone
- Thiacyclopentane dioxide
- Thiocyclopentane-1,1-dioxide
- Thiolane-1,1-dioxide
- Thiophan sulfone
- Thiophane 1,1-Dioxide
- Thiophane dioxide
- Thiophene, tetrahydro-, 1,1-dioxide

- Page Intentionally Left Blank -

APPENDIX B

MSDS

- Page Intentionally Left Blank -

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 4.0 Revision Date 27.02.2010
Print Date 13.05.2010
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product name	:	Sulfolane
Product Number	:	T22209
Brand	:	Aldrich
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+18003255832
Fax	:	+18003255052
Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

According to Regulation (EC) No1272/2008
Acute toxicity (Category 4)

According to European Directive 67/548/EEC as amended.
Harmful if swallowed.

Label elements

Pictogram

Signal word Warning

Hazard statement(s)
H302 Harmful if swallowed.

Precautionary statement(s) none

Hazard symbol(s)
Xn Harmful

R-phrase(s)
R22 Harmful if swallowed.

S-phrase(s)
S25 Avoid contact with eyes.

Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms	:	Tetrahydrothiophene 1,1-dioxide Tetramethylene sulfone
Formula	:	$C_4H_8O_2S$
Molecular Weight	:	120,17 g/mol

CAS-No.	EC-No.	Index-No.	Classification	Concentration

Sulpholane				
126-33-0	204-783-1	016-031-00-8	Acute Tox. 4; H302 Xn, R22	-

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Handle with gloves.

Eye protection
Safety glasses with side-shields conforming to EN166

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	crystalline
Colour	colourless

Safety data

pH	no data available
Melting point	20 - 26 °C - lit.
Boiling point	104 °C at 0,3 hPa - lit. 285 °C - lit.
Flash point	177 °C - closed cup
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Density	1,261 g/cm3 at 25 °C
Water solubility	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - mouse - 1.900 mg/kg

LD50 Dermal - rat - > 3.800 mg/kg

Skin corrosion/irritation
Serious eye damage/eye irritation
Eyes - rabbit - Mild eye irritation

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: XN0700000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Carassius auratus (goldfish) - 140 mg/l - 24 h

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

ADR/RID
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Acute Tox.	Acute toxicity
H302	Harmful if swallowed.
Xn	Harmful
R22	Harmful if swallowed.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Sulfolane W

Product Use: Solvent
Product Number(s): 0001024630, 0001024628, 0001024632, 0001024629, 0001024627, 0001024631, 0001024633, 0001099779, 0001100043
Synonyms: tetramethylene Sulfone; Sulfolane W; Sulfolane w/Water; Tetrahydrothiophene 1,1-dioxide
Product CAS No.: 126-33-0

Company Identification:
Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The WoodlandsTX 77380

Chevron Phillips Chemicals International N.V.
Brusselsesteenweg 355
B-3090 Overijse
Belgium

Product Information:
MSDS Requests: (800) 852 - 5530
Technical Information: (832) 813 - 4862
Responsible Party: Product Safety Group
Email:msds@cpchem.com

24-Hour Emergency Telephone NumbersHEALTH:Chevron Phillips Emergency Information Center 866.442.9628 (North America) and 1.832.813.4984 (International)
TRANSPORTATION: North America: CHEMTREC 800.424.9300 or 703.527.3887
ASIA: +1.703.527.3887
EUROPE: BIG .32.14.584545 (phone) or .32.14.583516 (telefax)
SOUTH AMERICA SOS-Cotec Inside Brazil: 0800.111.767
Outside Brazil: 55.19.3467.1600

SECTION 2 HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW
Clear liquid. Slight ammonium like odor.
NFPA RATINGS: **Health:** 1 **Flammability:** 1 **Reactivity:** 0

GHS Classification and Labeling:
Target organ toxicant (repeated exposure): Category 2.
Eye irritation: Category 2B.
Reproductive toxicant: Category 2.

Acute oral toxicant: Category 4.
Signal Word: Warning

GHS Symbol: 

Target Organ: May cause damage to organs through prolonged or repeated exposure.
Health Hazards: Fatal if swallowed. Suspected of damaging fertility or the unborn child. Causes eye irritation. Harmful if swallowed.
Precautionary Hazard - Prevention: Do not eat, drink or smoke when using this product. Wash thoroughly after handling.
Precautionary Hazard - Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Rinse mouth. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Precautionary Hazard - Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

EU Classification:
Signal Word:
Warning
Risk Phrases:
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R36: Irritating to eyes.
R22: Harmful if swallowed.
R63: Possible risk of harm to the unborn child.
Additional Hazards:
MAY CAUSE DAMAGE TO:
- - - - - KIDNEY
Safety Phrases:
S25: Avoid contact with eyes.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

****

IMMEDIATE HEALTH EFFECTS:
Eye: Contact with the eyes causes irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision. Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: Breathing of high vapor concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. The vapor or fumes from this material may cause respiratory irritation.

DELAYED OR OTHER HEALTH EFFECTS:
Reproduction and Birth Defects: Contains material that may cause adverse reproductive effects based on animal data.
Target Organs: Repeated inhalation of this material at elevated concentrations may cause damage to the following organ(s) based on animal data: - KidneySee Section 11 for additional information. Risk depends on duration and level of exposure.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	AMOUNT	EINECS / ELINCS	SYM	R-PHRASES

Sulfolane	126-33-0	>= 96.5 % weight	204-783-1	Xn	R22
Water	7732-18-5	< 3 % weight	2317-91-2	NA	NA
Monoethanolamine	141-43-5	< 0.06 % weight	205-483-3	Xn	R36/37/38, R20

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling / Peak	Notation
Monoethanolamine	ACGIH	3 ppm	6 ppm	NA	NA
Monoethanolamine	German MAK	5.1 mg/m3	NA	1	Skin
Monoethanolamine	OSHA PEL	3 ppm	NA	NA	NA
Sulfolane	ACGIH	Not Established	NA	NA	NA
Sulfolane	CPCHEM	.37 ppm	NA	NA	NA

SECTION 4 FIRST AID MEASURES

Eye: Flush eyes with running water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.
Skin: To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse. Get medical attention if any symptoms develop.
Ingestion: If swallowed, do not induce vomiting. Give the person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.
NFPA RATINGS: **Health:** 1 **Flammability:** 1 **Reactivity:** 0
FLAMMABLE PROPERTIES:
Flashpoint: 166°C (330.8°F) (Cleveland Open Cup)
Autoignition: NDA
Flammability (Explosive) Limits (% by volume in air): **Lower:** NDA **Upper:** NDA

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: Material will not burn unless preheated. Clear fire area of all non-emergency personnel. Only enter confined fire space with full gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material. Wear appropriate personal protective equipment when cleaning up spills. Refer to Section 8.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible sorbent materials

or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: U.S.A. regulations may require reporting spills of this material that could reach any surface waters. Report spills to local authorities and/or the National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL . REFER TO PRODUCT LABEL OR MANUFACTURERS TECHNICAL BULLETINS FOR THE PROPER USE AND HANDLING OF THIS MATERIAL .

Precautionary Measures: Do not get in eyes. Do not taste or swallow. Do not breathe vapor or fumes. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
General Handling Information: Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Launder contaminated clothing before reuse.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations, which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids, National Fire Protection Association (NFPA 77), Recommended Practice on Static Electricity' (liquids, powders and dusts), and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents' (liquids).
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:
Eye/Face Protection: Wear eye protection such as safety glasses, chemical goggles, or faceshields if engineering controls or work practices are not adequate to prevent eye contact.
Skin Protection: Wear impervious protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Users should determine acceptable performance characteristics of protective clothing. Consider physical requirements and other substances present when selecting protective clothing. Suggested materials for protective gloves include: Polyvinyl Chloride (PVC), or Neoprene
Respiratory Protection: If exposure is anticipated to be greater than applicable exposure limits, wear a NIOSH approved respirator that provides adequate protection from measured concentrations of this material, such as: Air-Purifying Respirator for Organic Vapors
Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling / Peak	Notation
Monoethanolamine	ACGIH	3 ppm	6 ppm	NA	NA
Monoethanolamine	German MAK	5.1 mg/m3	NA	1	Skin
Monoethanolamine	OSHA PEL	3 ppm	NA	NA	NA
Sulfolane	ACGIH	Not Established	NA	NA	NA
Sulfolane	CPCHEM	.37 ppm	NA	NA	NA

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear liquid. Slight ammonium like odor.
Autoignition: NDA
Boiling Point: 100°C (212°F) - 286°C (546.8°F)
Evaporation Rate: <1
Flammability (Explosive) Limits (% by volume in air): **Lower:** NDA **Upper:** NDA
Flashpoint: 166°C (330.8°F) (Cleveland Open Cup)
Freezing Point: 5.5°C (41.9°F) - 10°C (50°F)
Molecular Formula: C4H8SO2
Molecular Weight: NDA
Melting Point: NDA
Octanol / Water Partition Coefficient: log-Kow: NDA
pH: NA
Pour Point: NDA
Solubility (in water): Appreciable
Specific Gravity: 1.264 @ 30 ºC (86°F)
Vapor Pressure: NDA
Vapor Density (AIR=1): >1
Viscosity: NDA
Percent Volatile: 100 % volume

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to Avoid: No Data Available
Incompatibility With Other Materials: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: Carbon Oxides. Sulfur Oxides.
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS:

Acute Oral Toxicity: LD50 / rat / > 2000 mg/kg
Acute Dermal Toxicity: LD50 / rat / > 2000 mg/kg
Acute Inhalation Toxicity: LC50 / rat / > 12,000 mg/m3 / 4 hour(s)

Eye Irritation: This material is irritating to the eyes.
Skin Irritation: This material is not expected to be irritating to the skin.
Sensitization: Dermal - not a sensitizer

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains SULFOLANE:
Repeated Dose Toxicity: 28 days / oral / rat / 0, 60, 200, 700 mg/kg/day gavage / LOAEL = 200 mg/kg/day (males - kidney changes; altered blood chemistry increases in cholinesterase and total bilirubin, decreases in chloride), LOAEL - 700mg/kg (females - reduced locomotor activity; altered blood chemistry -decreases in glucose, increases in GPT); 27-90 days / inhalation of SULFOLANE AEROSOL / rat, monkey, dog / LOAEL > 200mg/m3 / day (all species - convulsions, vomiting, increased aggression)
Reproductive and Developmental Toxicity: 49 days (males), 41-50 days (females) / oral gavage / rat / Doses: 0, 60, 200, or 700 mg/kg/ daily / NOAEL = 700 mg/kg/day (male), LOAEL = 200 mg/kg/day (decreased birth index and number of pups); 41-50 days (dams exposed 14 days prior to mating to day 3 of lactation) oral / rat / Doses: 0, 60, 200, 700mg/kg/day / NOAEL > 700mg/kg
Genetic Toxicity: Ames test - negative; Mouse Lymphoma Forward Mutational Assay - negative; in vitro Sister Chromatid Exchange assay - Negative

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY:
This material is not expected to be harmful to aquatic organisms.
Sulfolane - 96 hour(s) / LC50 / Orange killifish (*Oryzias latipes*) / > 100 mg/l
Sulfolane - 96 hour(s) / LC50 / rainbow trout (*Salmo gairdneri*) / > 1000 mg/l
Sulfolane - 48 hour(s) / EC50 / water flea (*Daphnia magna*) / 852 mg/l
Sulfolane - 72 hour(s) / EC50 / green algae (*Selenastrum capricornutum*) / > 1000 mg/l

ENVIRONMENTAL FATE:
Biodegradability: 14 day(s) / 10 % volume
This material is expected to be ultimately biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition). Consult the appropriate domestic or international mode- specific and quantity- specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

Shipping Descriptions per regulatory authority.

US DOT
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

ICAO / IATA
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

IMO / IMDG

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

RID / ADR

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	YES
2.	Delayed (Chronic) Health Effects:	YES
3.	Fire Hazard:	NO
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01= CA Prop 65	17 = FDA 178	33 = RCRA Waste Appendix VIII
02 = LA RTK	18 = FDA 179	34 = RCRA Waste D-List
03 = MA RTK	19 = FDA 180	35 = RCRA Waste P-List
04 =MN Hazardous Substance	20 = FDA 181	36 = RCRA Waste U-List
05 =NJ RTK	21 = FDA 182	37 = SARA Section 302
06 = PA RTK	22 = FDA 184	38 = SARA Section 313
07 = CAA Section 112 HAPs	23 = FDA 186	39 = TSCA 12 (b)
08 = CWA Section 307	24 = FDA 189	40 = TSCA Section 4
09 = CWA Section 311	25 = IARC Group 1	41 = TSCA Section 5(a)
10 =DOT Marine Pollutant	26 = IARC Group 2A	42 = TSCA Section 8(a) CAIR
11 = FDA 172	27 = IARC Group 2B	43 = TSCA Section 8(a) PAIR
12 = FDA 173	28 = IARC Group 3	44 = TSCA Section 8(d)
13 = FDA 174	29 = IARC Group 4	45 = WHIMS - IDL
14 = FDA 175	30 = NTP Carcinogen	46 = Germany D TAL
15 = FDA 176	31 = OSHA Carcinogen	47 = Germany WKG
16 = FDA 177	32 = OSHA Highly Hazardous	48 = DEA List 1
		49 = DEA List 2

The following components of this material are found on the regulatory lists indicated.

Sulfolane	3, 6
Monoethanolamine	46

WHMIS CLASSIFICATION:

Class D, Division 2, Subdivision A: Very Toxic Material
Chronic Toxic Effects
Reproductive Toxicity
Class D, Division 2, Subdivision B: Toxic Material
Chronic Toxic Effects
Skin or Eye Irritation

CHEMICAL INVENTORY LISTINGS:

AUSTRALIA	YES (AUS)
CANADA	YES (DSL)
CHINA	YES (IECSC)

EUROPEAN UNION	YES (EINECS)
JAPAN	YES (ENCS)
KOREA	YES (ECL)
PHILIPPINES	YES (PICCS)
UNITED STATES	YES (TSCA)

EU LABELING:
Signal Word:
Warning
Symbols:
Xn - Harmful
Risk and Safety Phrases:
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R36: Irritating to eyes.
R22: Harmful if swallowed.
R63: Possible risk of harm to the unborn child.
S25: Avoid contact with eyes.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 1 Reactivity: 0 Special: NA

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA).

REVISION STATEMENT: This MSDS was updated to include a GHS review.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
ACGIH	-	American Conference ofGovernment Industrial Hygienists	OSHA	-	Occupational Safety & Health Administration
NIOSH	-	National Institute for Occupational Safety & Health	NFPA	-	National Fire Protection Agency
WHMIS	-	Workplace Hazardous Materials Information System	IARC	-	Intl. Agency for Research on Cancer
EINECS	-	European Inventory ofexisting Commercial Chemical Substances	RCRA	-	Resource Conservation Recovery Act
SARA	-	Superfund Amendments and Reauthorization Act.	TSCA	-	Toxic Substance Control Act
EC50	-	Effective Concentration	LC50	-	Lethal Concentration
LD50	-	Lethal Dose	CAS	-	Chemical Abstract Service
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To
CNS	-	Central Nervous System	MAK	-	Germany Maximum Concentration Values

This data sheet is prepared according to the latest adaptation of the EEC Guideline 67/548.
This data sheet is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200).
This data sheet is prepared according to the ANSI MSDS Standard (Z400.1).

This data sheet was prepared by EHS Product Stewardship Group, Chevron Phillips Chemical Company LP, 10001 Six Pines Drive, The Woodlands, TX 77380.
This data sheet is prepared according to the Globally Harmonized System (GHS).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

APPENDIX C

UOP Sulfolane Process Whitepaper

- Page Intentionally Left Blank –

UOP
A Honeywell Company

Sulfolane™ Process

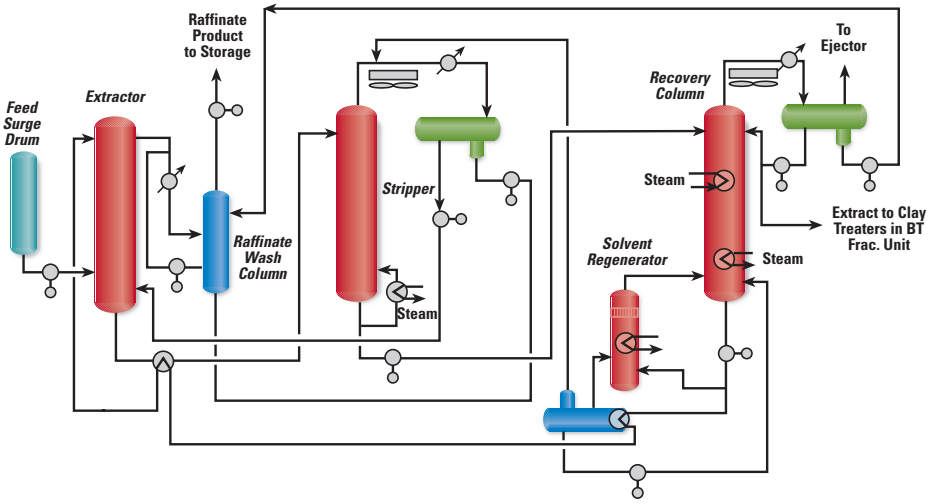
Aromatics

Application

The Sulfolane process combines liquid-liquid extraction with extractive distillation to recover high purity aromatics from hydrocarbon mixtures, such as reformed petroleum naphtha (reformate), pyrolysis gasoline (pygas), or coke oven light oil (COLO). Contaminants that are the most difficult to eliminate in the extraction section are easiest to eliminate in the extractive distillation section and vice versa. This hybrid combination of techniques allows Sulfolane units to process feedstocks of much broader boiling range than would be possible by either technique alone. A single Sulfolane unit can be used for simultaneous recovery of high-purity C_6-C_9 aromatics, with individual aromatic components recovered downstream by simple fractionation.

Typically when just one or two carbon number aromatics are recovered, the Sulfolane unit can be built as an Extractive Distillation (ED) unit only and the extractor can be eliminated, thereby simplifying the design. (See ED Sulfolane Technical data sheet for more information)

Sulfolane Process



The Sulfolane process takes its name from the solvent used: tetrahydrothiophene 1, 1-dioxide, or “sulfolane.” Sulfolane was developed as a solvent by Shell Oil Company in the early 1960s and is still the most efficient solvent available for the recovery of aromatics. Most extraction units can be made to operate at high purity and recovery by circulating more and more solvent. Because the sulfolane solvent exhibits higher selectivity and capacity for aromatics than any other commercial extraction solvent, Sulfolane units operate at the lowest available solvent-to-feed ratio for any given reformate feedstock. Therefore, for reformate applications, a Sulfolane unit is less expensive to build and operate than any other type of extraction unit.

A Sulfolane unit is usually incorporated within an aromatics complex to recover high-purity benzene and toluene products from reformate. In a modern, fully integrated UOP aromatics complex, the Sulfolane unit is located downstream of the reformate splitter column. The C_6-C_7 fraction from the overhead of the reformate splitter is fed to the Sulfolane unit. The aromatic extract from the Sulfolane unit is clay treated to remove trace olefins, and individual benzene and toluene products are recovered by simple fractionation. The raffinate from the Sulfolane unit is usually blended into the gasoline pool or used for cracker feedstock.

Benzene is usually recovered by extraction or extractive distillation in order to meet purity specifications for petrochemical applications. Toluene is extracted for direct use in petrochemical applications and is usually extracted before being fed to a dealkylation or dispro-portionation unit for production of additional benzene and xylenes. Modern CCR Platforming™ units operate at such high severity that the C_8^+ fraction of the reformate does not contain any significant amount of nonaromatic impurities and may be sent directly to the xylenes recovery section of the plant without extraction. However, the C_8^+ fraction of pygas and COLO streams contains significant amounts of nonaromatics impurities and, therefore, must be extracted before either being recovered as mixed xylenes or sent to xylene recovery.

Process description

Fresh feed enters the extractor and flows upward, countercurrent to a stream of lean solvent. As the feed flows through the extractor, aromatics are selectively dissolved in the solvent. A raffinate stream, very low in aromatics content, is withdrawn from the top of the extractor.

The rich solvent, loaded with aromatics, exits the bottom of the extractor and enters the stripper. The nonaromatics components having volatilities higher than that of benzene are completely separated from the solvent by extractive distillation and removed overhead along with a small quantity of aromatics. This overhead stream is recycled to the extractor where the light nonaromatics displace the heavy nonaromatics from the solvent phase leaving the bottom of the extractor.

The bottoms stream from the stripper, substantially free of nonaromatic impurities, is sent to the recovery column, where the aromatic product is separated from the solvent. Because of the large difference in boiling point between the sulfolane solvent and the heaviest aromatic component, this separation is accomplished easily, with minimal energy input. To minimize solvent temperatures, the recovery column is operated under vacuum. Lean solvent from the bottom of the recovery column is returned to the extractor. The extract is recovered overhead and sent on to distillation columns downstream for recovery of the individual benzene and toluene products.

The raffinate stream exits the top of the extractor and is directed to the raffinate wash column. In the wash column, the raffinate is contacted with water to remove dissolved solvent. The solvent-rich water is vaporized in the water stripper by exchange with hot circulating solvent and then used as stripping steam in the recovery column. Accumulated solvent from the bottom of the water stripper is pumped back to the recovery column. The raffinate product exits the top of the raffinate wash column. The amount of Sulfolane solvent retained in the raffinate is negligible.

Under normal operating conditions, the Sulfolane solvent undergoes only minor oxidative degradation. A small solvent regenerator is included in the design of the unit as a safeguard against the possibility of air leaking into the unit. During normal operation, a small slip-stream of circulating solvent is directed to the solvent regenerator for removal of oxidized solvent.

The extract product from a Sulfolane unit may contain trace amounts of olefins and other impurities which would adversely affect the acid wash color tests of the final benzene and toluene products. To eliminate these trace impurities, the extract is clay treated prior to fractionation. Clay treating is done at very mild conditions and clay consumption is minimal.

The treated extract is directed to the aromatics fractionation section where high-purity benzene, toluene, and sometimes mixed xylenes are recovered. The design of the aromatics fractionation section varies depending on the particular processing requirements of the customer.

Precess performance

The performance of the Sulfolane process has been well demonstrated in more than 129 operating units. The recovery of benzene exceeds 99.9 wt-%, and recovery of toluene is typically 99.8 wt-%. The Sulfolane process is also efficient at recovery of heavier aromatics if necessary. Typical recovery of xylenes exceeds 98 wt-%, and 99 wt-% recovery has been demonstrated commercially with rich feedstocks.

Sulfolane units routinely produce a benzene product with a 5.5°C solidification point or better, and many commercial units produce benzene containing less than 100 ppm nonaromatic impurities. The toluene and C_8 aromatics products from a Sulfolane unit are also of extremely high purity, easily exceeding nitration grade specifications. In fact, the ultimate purity of all of the aromatic products is usually more dependent on the design and proper operation of the downstream fractionation section than on the extraction efficiency of the Sulfolane unit itself.

The purity and recovery performance of an aromatics extraction unit is largely a function of energy consumption. In general, higher solvent circulation rates result in better performance, but at the expense of higher energy consumption. The Sulfolane process demonstrates the lowest energy consumption of any commercial aromatics extraction technology. A typical Sulfolane unit consumes 275-300 kcal of energy per kilogram of extract produced, even when operating at 99.99 wt-% benzene purity and 99.95 wt-% recovery. Sulfolane units are also designed to efficiently recover solvent for recycle within the unit. Expected solution losses of Sulfolane solvent are less than 5 ppm of the fresh feed rate to the unit.

Features and benefits

- **High Purity Benzene** - The benzene produced in a Sulfolane unit (with downstream benzene and toluene fractionation) is typically 99.9 wt-% purity ASTM “Refined Benzene-545”. Alternatively, the more stringent ASTM “Benzene for Cyclohexane Feedstock” grade may be produced.

- **High Purity Toluene** - The toluene produced is at least TDI grade with less than 1000 wt-ppm non-aromatics.
- **High Recoveries** - The expected recovery of benzene and toluene is greater than 99.5% of these aromatic components present in the fresh feed. The make-up rate for sulfolane solvent is negligible.
- **Compatible Solvent** - Sulfolane is the most widely used solvent for aromatics extraction and a readily available commodity chemical. There are no co-solvents or proprietary additives. In addition, sulfolane does not contain nitrogen which can be harmful to catalysts in downstream process units.
- **Energy Efficient** - The Sulfolane process demonstrates low energy consumption.

Economics

Basis: 710 KMTA (17,000 BPSD) of BT cut feedstock from reformate with 66 wt-% aromatics

Estimated Erected Cost, US$ 18 MM
(2006 US Gulf coast basis, Inside battery limits only)

Estimated Utility Consumption

Electric power, kW	427
Medium pressure steam, MT/hr	26.8
Cooling water, m^3/h	292

Commercial experience

In 1962, Shell commercialized the first Sulfolane units in its refineries in England and Italy. The success of the Sulfolane process led to an agreement in 1965 whereby UOP became the exclusive licensor of the Sulfolane process. Many of the process improvements incorporated in modern Sulfolane units are based on design features and operating techniques developed by UOP. As of 2006, UOP has licensed a total of 149 Sulfolane units throughout the world.

For more information

Sulfolane technology services are available on request. For more information, contact your local UOP representative or our Des Plaines sales office:

e-mail: info@uop.com
fax: +1-847-391-2253
phone: +1-847-391-2000

UOP LLC
25 East Algonquin Road
Des Plaines, IL 60017-5017
U.S.A.
www.uop.com

UOP 4680-15 1106AR0Af

- Page Intentionally Left Blank -

APPENDIX D

TTC Labs Corrosion Report

- Page Intentionally Left Blank -

Sulfolane Technical Assistance and Evaluation

TTC was asked to provide OASIS, Inc. with a report of the mechanisms by which the solvent commonly referred to as sulfolane degrades, means of detecting sulfolane and substitutes for sulfolane solvent. In addition to these three items, the report will begin a brief description of the Sulfolane Unit process.

TTC has over 20 years of experience working on Sulfolane Units. Our experience includes working in the following units:

- North America
  - Petrocanada Montreal
  - Suncor Eagle Point
  - Valero #1 & #2 Corpus Christi
  - Citgo Lake Charles
  - ExxonMobil Chalmette
  - ExxonMobil Baytown
  - Flint Hills #1 & #2 Fairbanks
  - Hess St. Croix
  - Phillips #1 & #2 Puerto Rico
  - Corco #1 & #2 Puerto Rico
  - LyondellBasell Houston
  - LyondellBasell Channelview
  - Koch Corpus Christi
  - Phillips Sweeney
  - ConocoPhillips Belle Chasse
- South America
  - YPF Repsol La Plata
  - Braschem Salvador
- Europe
  - Conoco Humber UK
  - Total #1 & #2 Gonfreville
  - CEPSA Algeciras
- Asia
  - Itemitsu 4 Locations
  - Fuji Oil Mizushima
  - Japan Energy Corp 2 Locations
  - Nippon Oil 4 Locations
  - Kashima Oil Kashima
  - Tonen #1 & #2 Wakayama

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

- NMPRC Negishi
- NPCC Kawasaki
- ExxonMobil Singapore
- Singapore Refining Company
- Petronas Kerteh Malaysia
- Shangai Petrochemical Shanghai
- Shanghai Refining Shanghai
- Sinopec Partnership Quantsao China

- Middle East
  - Gadiv Haifa

1. Sulfolane Process Description

Sulfolane Units are utilized in the Refining and Petrochemicals industries to remove benzene, toluene and xylenes (BTX) from the gasoline pool. Generically, these are called Aromatics Extraction Units. Sulfolane is one of a few types of solvents that can be used to dissolve aromatics from a hydrocarbon stream.

The hydrocarbon feed enters a liquid-liquid extractor column with trays or rotating disc contactors and operates with the solvent flowing counter-current to the flow of hydrocarbons. The mass transfer of aromatics, and some non-aromatics, into the solvent occurs in the extractor column. The aromatics in the solvent are then fed to a liquid-vapor stripping column, where the non-aromatic hydrocarbons are separated by extractive distillation and sent back to the extractor. The aromatics and solvent stream then travel to a liquid-vapor recovery column, where the aromatics are vaporized out of the solvent. The flow scheme for a typical Sulfolane Unit is in Figure 1.

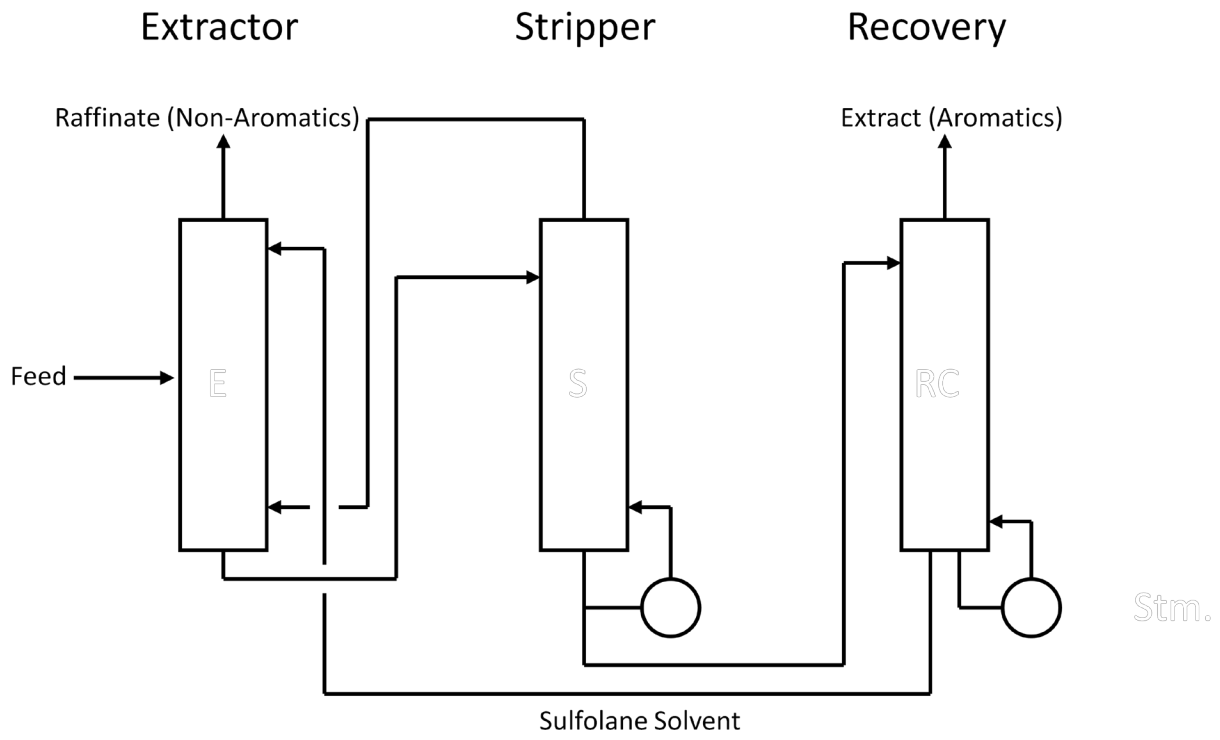


Figure 1. Sulfolane Process

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

In most plants, the raffinate stream is sent directly to the gasoline pool and must meet stringent benzene specs. The extract can be sent to fractionation for the recovery of high purity chemical intermediates, and, in some cases, can also be used as an octane enhancer for the gasoline pool.

The raffinate stream is washed with water to remove solvent prior to leaving the unit. The rich wash water stream flows to the overhead condenser of the stripper in the Sulfolane Unit, so the loss of solvent is usually less than 5 ppm

Most plants have a fresh solvent tank onsite. Because there is a small amount of solvent loss over time, fresh solvent is added to keep the unit inventories steady. Solvent is mostly trucked in from an outside vendor.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

2. Sulfolane Corrosion

Because of the corrosive nature of the products of solvent decomposition, corrosion control in Sulfolane Units is critically important. In the 150+ Sulfolane Units around the world, one or two major columns in the extraction section are condemned and replaced due to corrosion every year.

The two major causes of solvent decomposition are reactions with oxygen and chlorides. The first is usually due to the leakage of air into the unit, while the second comes from chlorides from the upstream reformers.

When designing a Sulfolane Unit, a totally enclosed sewer system is included which flows to solvent sump system. From solvent sump, the material is either pumped into the stripper column overhead receiver or into solvent regenerator column. To our knowledge, solvent has never leaked out of a plant.

Solvents

Aromatics can be separated from other hydrocarbons by taking advantage of the different polarities of various solvents. In general, the more polar the solvent, the better it will be at separating aromatics from non-aromatics. As polarity increases, the solvent gets more selective, but the solvency decreases. Therefore, to be useful on an industrial scale, the solvent must be a compromise between selectivity and solvency. A graph of selectivity and solvency for several common solvents is in Figure 2 below.

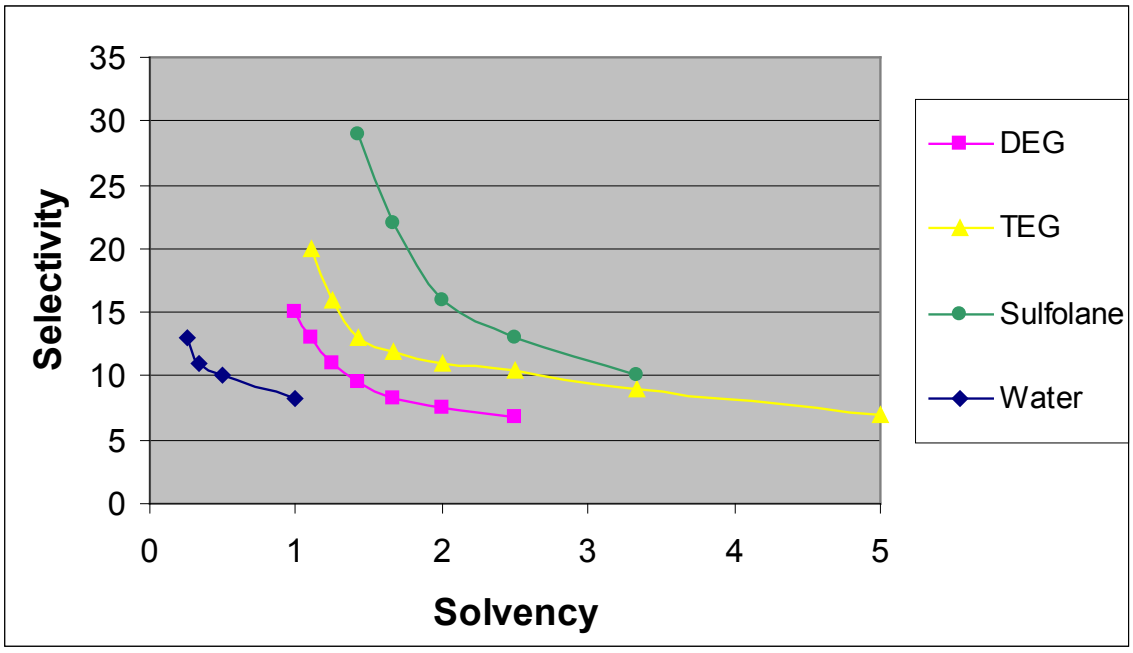


Figure 2. Solvency vs. Selectivity

Due to the finite selectivity, any solvent that dissolves aromatics will also dissolve some non-aromatics, which is the reason a BTX extractor is always followed by a stripper column.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

Sulfolane was invented by Shell in their search for a molecule that was a better solvent than glycols. It is formed by the reaction of butadiene and SO_2. Because of the increased polarity from combining sulfur with oxygen, aromatics dissolve better in sulfolane than in heavy glycols. Unfortunately, the mirror image of being a better solvent is that sulfolane is also more difficult to remove from both the raffinate and extract streams. Thus, sulfolane requires a counter-current, high energy wash system for raffinate and a refluxed recovery column for extract.

Because it contains sulfur, sulfolane solvent has decomposition chemistry that is different from the heavy glycols. As shown in Figure 3 below, the sulfolane molecule is a cyclic C4 group with sulfur double bonded to two oxygen molecules. The chemical name for sulfolane is tetrahydrothiophene 1-1 dioxide.

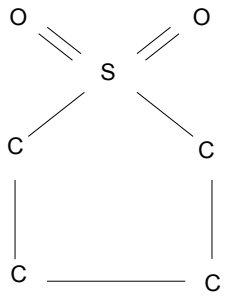


Figure 3. Sulfolane Molecule

Sulfolane has a long history of corrosion problems. The sulfolane molecule can react to form organic and sulfuric acids, which are very corrosive in small concentrations. Because of the strength of the acids, they are more difficult than the glycols to neutralize with amines, like methyl ethylamine (MEA) and diethyl amine (DEA).

Because of the mild acidity of both glycols and sulfolane, clean solvent is a “self-cleaning” fluid. Because of this, clean solvent keeps the trays in the extractor free of debris, as well as the rest of the solvent circuit.

In addition to glycol and sulfolane, other solvents are also available. The first is di glycol amine, DGA, which is a solvent that is still in use. The second is n-methyl pyrolidone, NMP, which can be found in plants designed by Lurgi. These solvents have corrosion problems that are similar to glycols.

Oxygen

Corrosion in Sulfolane Units is generally caused by ingress of oxygen into the process and the subsequent reaction of this oxygen with solvent to form organic and sulfur acids. When any solvent is heated in the presence of air, the pH falls from just above six to below three. As the reactions between solvent and oxygen proceed, the sample of solvent turns a dark color, the acid number slowly increases, and the corrosion rate increases dramatically. With time, the organic and sulfur acids polymerize until they settle out as solids. Thus, solvent color correlates

well with solvent degradation, pH, acid numbers and corrosion rates.

With either sulfolane or glycol, analyses of the degradation products generally identify aldehydes, ketones and organic acids. With sulfolane, the degradation products also include sulfur-containing acids.

Because of the variation in the amount of degradation material, the change in solvent properties with increasing amounts of degradation products is difficult to quantify. However, an overwhelming amount of qualitative, circumstantial and anecdotal evidence indicates an important loss of selectivity and ability to quickly separate from hydrocarbons as the solvent degrades. At extreme concentrations of degradation products, the solvent may take days to completely separate the solvent from non-aromatic hydrocarbons. Thus, in addition to the corrosion that takes place, degraded solvent decreases the capacity of the extraction section.

The reaction of oxygen and solvent at temperatures above 50C has been widely studied. While the products of the reaction are difficult to identify, they are easy to classify as corrosive. The results can be seen in virtually every commercial extraction unit.

Using solvent color as a means of detecting oxygen ingress is easy. As described above, the solvent starts to turn a dark color, the pH of the water drops and the acid number of the solvent increases. The photo in Figure 4 below shows solvent from one plant during a one year solvent clean up and oxygen leak detection project. Note that the first sample is on the far right. Thus, from right to left, the solvent quality greatly improved.

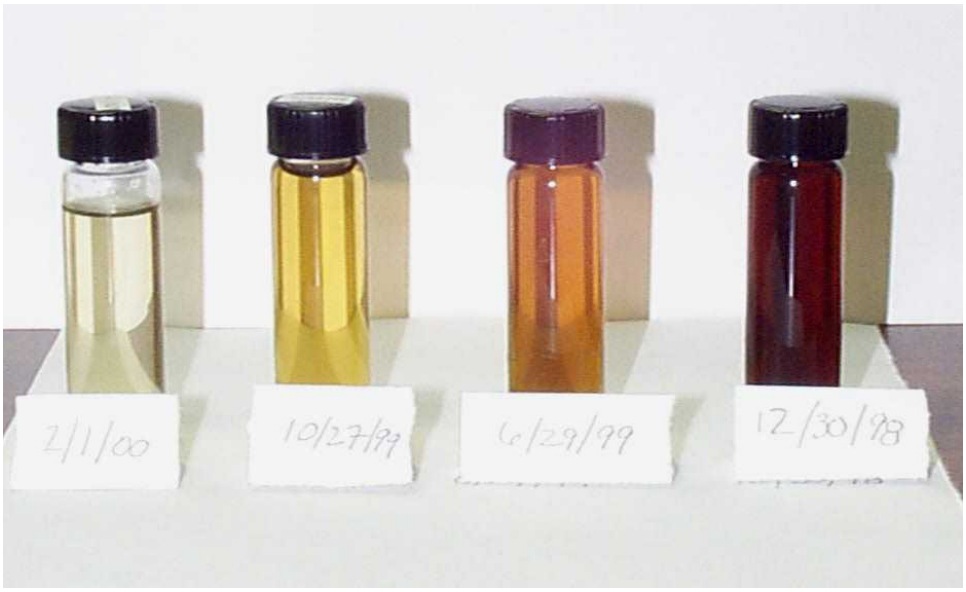


Figure 4. Solvent Condition [1]

1 Photo provided by Tom Moody from the Citgo Corpus Christi refinery.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

There are two common sources of oxygen ingress, air dissolved in the feed and air leaking into the vacuum portions of the plant. Of these two, the vacuum leaks are far more common.

Because some refineries use inert gas for pressure control and gas blanketing, it is imperative that the gas does not contain any oxygen. Also, loading and transporting will expose the feed to oxygen.

To search for air dissolved in the feed, it is usually easier to analyze the vapor in the feed tanks than to detect dissolved oxygen in the feed itself. Oxygen in the vapor above the liquid feed will slowly dissolve into the liquid and enter the extractor. The gas blanketing or tank seals must be adequate to exclude oxygen. It is often better to run feed directly from the upstream fractionator than to run through a tank. However, if a tank is required, it can be piped up to absorb the swings in flow rates. This way most of the extractor feed can come directly from the upstream fractionator.

For Sulfolane Units, leak testing in the vacuum portions of the plant is more complicated. At the recovery column, the first test is to block in the ejectors on the overhead receiver. With no air leaks, the recovery column can operate at the vapor pressure of the extract in the receiver. Most recovery columns can operate with the jets blocked in and shut down.

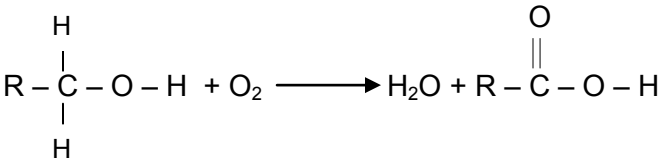
If a leak exists, the pressure in the recovery column will slowly increase to atmospheric pressure unless the ejectors are in service to remove the non-condensable material. If this happens, a search program must be initiated to find the leak. The traditional method is to tape each flange with duct tape, punch a small hole in the tape, and test for flow with soap bubbles at the hole. If the flange leaks, the bubbles will flow inward towards the flange itself. Other methods include portable sonic noise meters. These instruments detect the noise of an inward leak. Regardless of the methodology, searching for vacuum leaks requires considerable diligence and patience. Therefore, it is a common practice to assign this task to a specific individual.

For units with stand-alone regenerators, this column is more difficult to test for leaks than the recovery column. Because the feed to the regenerator often contains a small amount of hydrocarbon, the pressure in the regenerator overhead receiver will be the vapor pressure of the heavy aromatic at the temperature of the overhead receiver. Since this is higher than the vapor pressure of solvent at the same pressure, the presence of even a small amount of hydrocarbon will cause the pressure to increase rapidly if the ejectors are blocked in. However, if no air leaks into the regenerator, the pressure will stabilize below atmospheric pressure. If air is leaking in, then the pressure will increase all the way to atmospheric pressure.

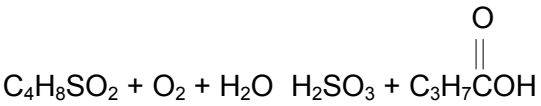
Because the regenerator can be isolated and shut down without affecting the rest of the unit, it is possible to test the regenerator system for leaks at a positive pressure. Since leaks are much easier to detect if the system is above atmospheric pressure, the leaks may be found much faster. It may, however, be possible for the flanges to hold a positive pressure, especially while cold, and then leak when under a vacuum, especially when hot.

The two acid molecules produced by oxygen contamination in sulfolane and glycols are shown below.

Glycols – Mild Acid



Sulfolane – Strong Acid



Chlorides

Since most BTX extraction units process reformates, chloride contamination of the solvent is an ongoing problem. From analyses of the material removed at the bottom of the regenerator, it appears that the chlorides react with the organic acids and perhaps even the solvent to form compounds that are heavy enough to drop out in the regenerator. In the absence of an operating regenerator, chlorides will build up in the circuiting solvent and cause corrosion problems.

Chlorides from upstream reforming units enter extraction units with the feed, even when the feed is a distillate product from a reformate splitter. The problem gets worse when the chloride injection rate to the reformer is increased. In the presence of heat and time, organic chlorides will form corrosive compounds.

Similar to using solvent color to detect oxygen ingress, detecting chlorides is easy. The solvent takes on a darker color, the acid number of the solvent increases, but the pH of the water often does not change. In addition, the solids that cause the color will settle to the bottom of a sample bottle given a day or two of settling time. The definitive test is to submit a sample of solvent for microcoulometric chloride analysis.

Unfortunately, chloride breakthrough from the upstream reformers appears to vary with time as shown in Figure 5.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

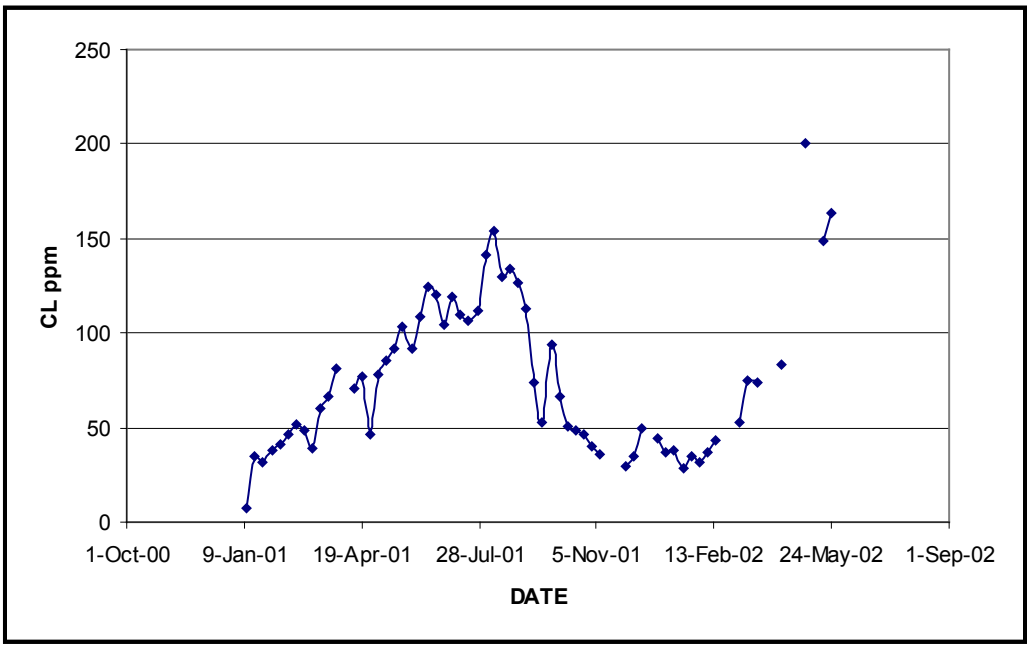


Figure 5. Chloride Breakthrough **2**

For concentrations between 50 and 100 ppm chloride, it appears that glycols are not too corrosive. The same chloride concentration in sulfolane, however, appears extremely corrosive. This is probably due to the higher reboiler temperatures in Sulfolane Units.

Temperature

In Sulfolane Units, it is important to understand how temperature affects the rate of sulfolane decomposition. Table 1 presents data regarding thermal decomposition of sulfolane obtained by Shell in 1964.

Table 1

Thermal Stability and Non-Corrosivity

Temperature (oC)	Bubbled Gas	Rate Decomposition (% per hour)
200	N2	0.002
200	CO2	0.002
200	Air	0.009
220	N2	0.01
230	N2	0.02

While this data shows that bubbling air through solvent at high temperatures nearly quadruples the rate of decomposition, it is important to note that the lab tests were performed in a beaker that was open to the atmosphere. Hence, the actual decomposition rates experienced in commercial Sulfolane Units is much lower than indicated by the laboratory data.

2 Chart provided by Dave Harmeyer from Frontier El Dorado refinery.

In the absence of oxygen, water-white solvent has been observed in Sulfolane Units that have reboiler temperatures above 200C. Thus, based on commercial data, degradation in the absence of oxygen seems insignificant

Even with the proven stability of sulfolane up to 200C, higher temperatures will lead to thermal decomposition. The problem is particularly acute when the temperature of the heating medium for the reboiler is above 235C. This will give a wall temperature well above 200C. To avoid higher wall temperatures, the temperature of the heating medium should never exceed 250C.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

3. Monitoring Solvent Condition

Most plants will monitor the quality of the solvent in several ways. Inside the unit, the neutralizer MEA is used to tie up the acidic degradation products. While the pH of the water streams will show the availability of free MEA, it does not show if the condition of the solvent is improving. The alternatives for this job include solvent color, solvent acid number, several test tube tests and the TTC Solvent Settling Test Procedure.

Solvent color is the easiest way to monitor solvent condition. In the absence of degradation products, both sulfolane and glycol are almost water white. As the solvent degrades, this color gets darker until it is opaque in a test tube. As the solvent improves, the color goes from black to brown to yellow to clear as shown in the “Solvent Degradation” photo above.

Acid number is a quantitative value that measures the mg of base required to neutralize the acids in the solvent, or mg KOH per g of sample as described in ASTM Test Method D 974. As the solvent degrades, the acid number will increase. As the solvent improves, the acid number will decrease.

If the solvent color is too dark to be used as a yardstick for the change in solvent condition, then the dark material can be isolated in a test tube and measured. To conduct this test, mix equal parts of solvent, raffinate and water in a test tube. Shake well and allow to settle. The settling time will be the first indication of solvent quality. Most of the dark material will concentrate at the interface between the solvent and hydrocarbon phases. As the solvent worsens, the amount of dark material will increase. As the solvent improves, the amount of dark material will decrease.

Another test tube method measures the ability of the solvent to separate from hydrocarbons. To conduct this test, mix equal parts of solvent and raffinate in a test tube and shake well. Measure the time it takes for the two phases to separate. The interface for high quality solvent will separate at the rate of one inch per second (minimum). Poor quality solvent can take several seconds per inch. Because this test imitates the separation that takes place in the top of the extractor, it shows why feed rates must sometimes be reduced as solvent quality deteriorates. A more detailed procedure is available from TTC.

Because of the high velocities, erosion and corrosion at the impellers of the lean solvent pumps should be checked at least annually. Otherwise, the pump head and capacity will slowly decrease and eventually limit production.

For optimum performance, solvent color can be the best early indicator of solvent quality problems. If the operators are tuned in to the appearance of high quality solvent, then problems can be addressed sooner rather than later.

Of the two solvents, degradation products from sulfolane are more corrosive than those from glycols. In several Sulfolane Units, entire columns have had to be replaced due to wall thinning from corrosion. With both solvents, decomposition products can negatively affect the capacity of the plant.

Outside of the unit, the test for the detection of sulfolane is difficult to reproduce and prone to inaccurate measurements. Usually, the sample is tested for sulfur by either microcoulometric or reductive methods, then washed with water, and both phases tested again for sulfur.

4. Sulfolane Substitutes

Other than sulfolane, glycols are the most common group of solvents used in Aromatics Extraction Units. Specifically, tetraethylene glycol (TTEG) is the best of the group. In general, glycols are characterized as alcohols with two –OH groups. The ethylene glycol (EG) family of solvents is composed of a C_2H_4O base molecule. For any EG, the chemical formula will resemble $HO(C_2H_4O)_nH$, where n is the number of C_2H_4O groups. For EG, there is only one C_2H_4O group as illustrated in Figure 6 below.

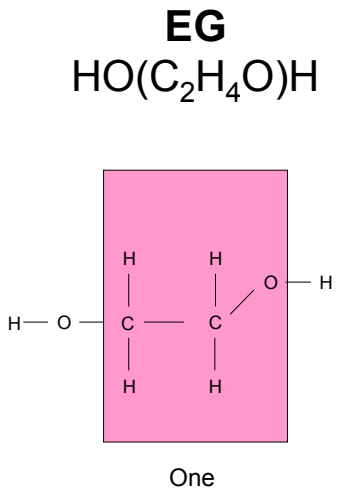


Figure 6. Ethylene Glycol (EG)

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

The first byproduct of making EG is di ethylene glycol, DEG, which has 2 C_2H_4O groups as shown in Figure 7 below.

DEG

$HO(C_2H_4O)_2H$

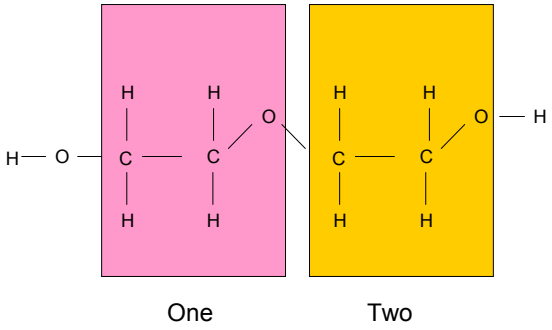


Figure 7. Di Ethylene Glycol (DEG)

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

Because DEG appeared to improve solubility, tri ethylene glycol, TEG, with three C_2H_4O groups was tried. The TEG molecule is shown in Figure 8 below.

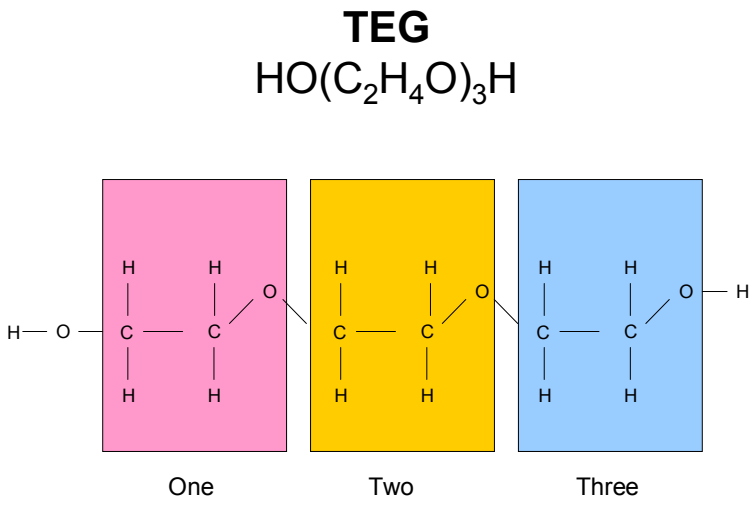


Figure 8. Tri Ethylene Glycol

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

Tetra ethylene glycol, TTEG, was introduced shortly after TEG, and is the most common solvent currently used in Udex Units. The following Figure 9 presents the TTEG molecule with four C_2H_4O groups.

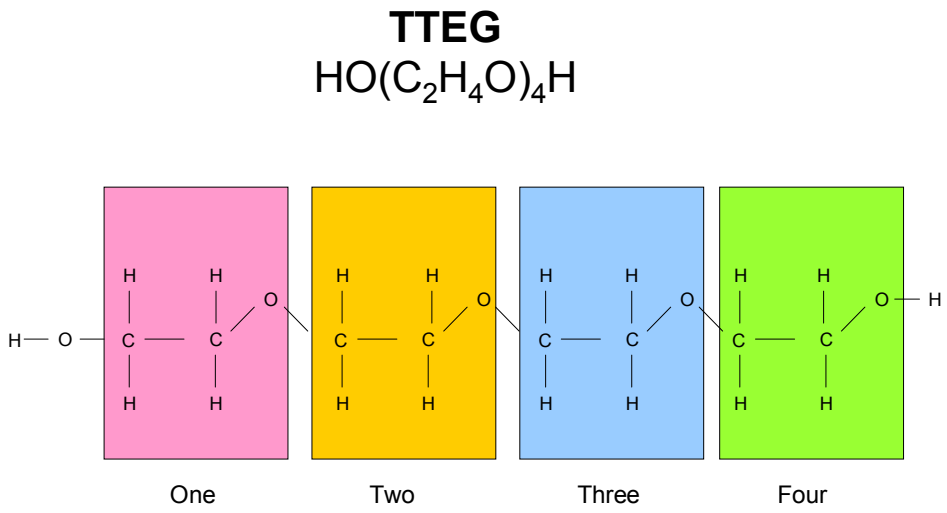


Figure 9. Tetra Ethylene Glycol

The heavy glycol molecules react with oxygen to form (R-COOH) organic acids that are mildly corrosive. These organic acids are easily neutralized with MEA and DEA. This is in contrast to sulfolane, which produces sulfur based acids and are more difficult to neutralize. Therefore, in extreme cases of corrosion problems in Sulfolane Units, it is better to switch from sulfolane to TTEG solvent.

As the glycols decompose in the presence of oxygen, several kinds of organic oxygenates are formed, such as aldehydes, ketones and organic acids. Laboratory analyses of byproducts in solvent streams often show the presence of acetaldehyde, acetone and acetic acid, all of which are corrosive. These compounds are shown in Figure 10 below.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

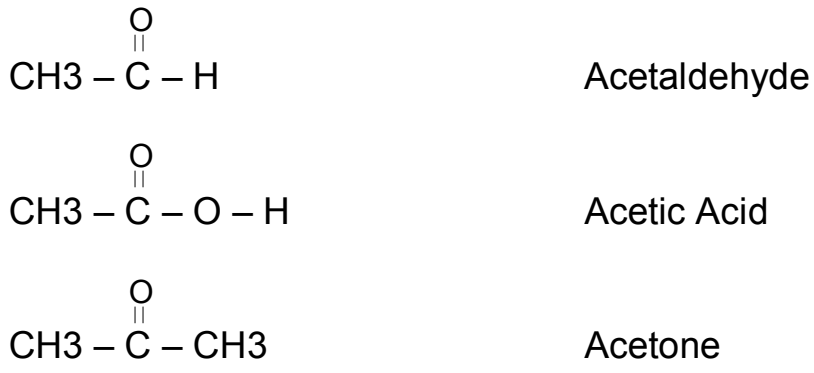


Figure 10. Glycol Degradation Products

Because of the strong odors associated with aldehydes and ketones, leaks around seals in the solvent circuit can often be detected by their smell. However, we do not recommend that any person smell solvent as a means of detecting decomposition or contamination.

Summary

In closing, sulfolane solvent has a long history of corrosion issues. However, there have been few reported issues of sulfolane leaking out of the plant.

It is TTC's hope that this report covers the information requested by OASIS, Inc.. Should additional information be helpful, we look forward to being of assistance.

280 Harbor View Dr., Fond du Lac, WI 54935 U.S.A.
Tel.: (920) 923-9754 Fax: (920) 923-9756 Email: allison@ttclabs.com

Avoid Sulfolane Regeneration Problems

DONALD F. SCHNEIDER
STRATUS ENGINEERING, INC.

The regeneration of sulfolane, a common extraction solvent, is difficult. With proper attention to design and operation, problems can be minimized.

LIQUID/LIQUID EXTRACTION, COMMONLY using sulfolane (tetrahydrothiophene 1,1-dioxide, $C_4H_8O_2S$; Figure 1) as the solvent, is one means to separate aromatic compounds from other hydrocarbons (Figure 2). Online regeneration is typically performed to mitigate the deleterious effects of solvent degradation over time. However, sulfolane's physical properties and the nature of removing impurities from a solvent can make regeneration difficult. This article examines the design and operating issues associated with the three main types of sulfolane regenerators — steam-assisted, reboiled and flash.

Degradation

Current literature suggests that the onset of sulfolane decomposition begins at 392°F *(1),* and high decomposition rates are easily observed at 516°F *(2).* Furthermore, the presence of oxygen accelerates decomposition *(1, 3, 4).* Unacceptably high corrosion at paraffin stripper and aromatics stripper reboiler tem-

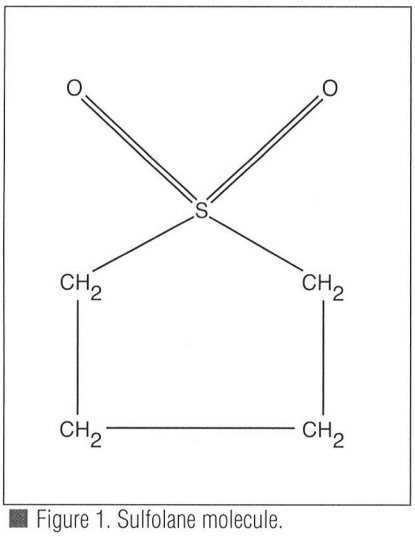


Figure 1. Sulfolane molecule.

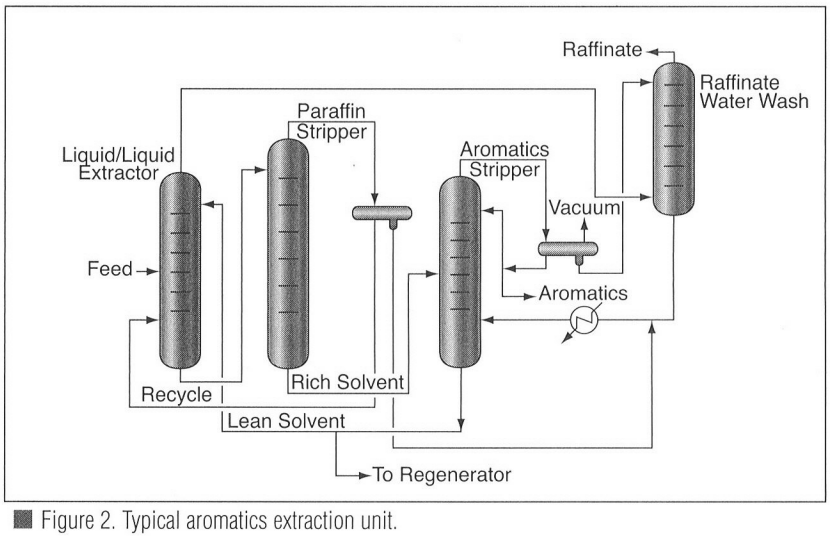
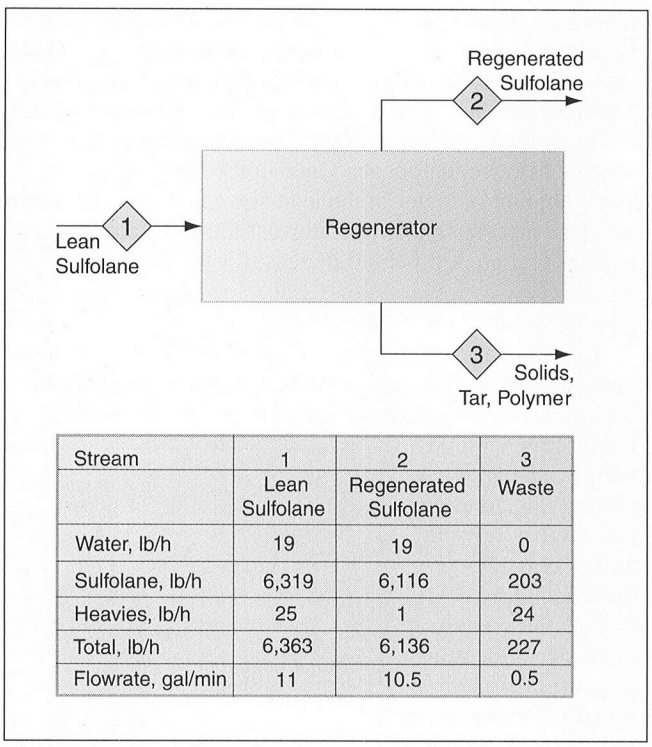


Figure 2. Typical aromatics extraction unit.



Stream	1	2	3
	Lean Sulfolane	Regenerated Sulfolane	Waste
Water, lb/h	19	19	0
Sulfolane, lb/h	6,319	6,116	203
Heavies, lb/h	25	1	24
Total, lb/h	6,363	6,136	227
Flowrate, gal/min	11	10.5	0.5

■ Figure 3. Block diagram of solvent regenerator.

peratures of 350–380°F can be experienced in units with oxygen intrusion. Reboilers and their associated equipment are common focal points for corrosion *(3)*.

Solvent degradation products include SO_2, acids and polymers *(1, 5)*. Acids are, by their nature, destructive. Many polymers are miscible in sulfolane *(6, 7)*; those that stay in solution reduce solvent power, those that do not foul equipment.

Sulfolane is also a good solvent for capturing acid gases and mercaptans. It is part of the solvent system employed in an acid-gas sweetening process. Any acid gas evolving from sulfolane decomposition or associated corrosion could be held in solution throughout at least part of the extraction unit, interacting with degradation products and accelerating corrosion.

Corrosion resulting from degradation contributes byproducts to the solvent flow, including iron solids, acid salts and polymer solids. These materials cannot escape the solvent loop; they exit each column with the bottoms product along with the sulfolane.

The solvent decomposition mechanism is temperature-related. Minimizing reboiler heating-medium temperatures reduces decomposition and corrosion. Although bulk reboiler temperatures may be below the decomposition temperature, film temperatures are higher. Some units employ fired-heater reboilers that accelerate decomposition with their high film temperatures. Regenerators should operate at as low a temperature as possible. This requires low operating pressures to accommodate sulfolane's low vapor pressure.

Electrolysis studies provide some information on decomposition mechanisms. Upon electro-oxidation *(8)*, sulfolane decomposition products include CO_2, SO_2, butene and butane. Butene formation suggests a straightforward polymer production route. Butane formation reveals the importance of hydrogen donors (acid, water): sulfolane possesses only eight hydrogen atoms, while butane has ten; without hydrogen donors, it is possible that butene formation is favored leading to polymer generation.

Regeneration

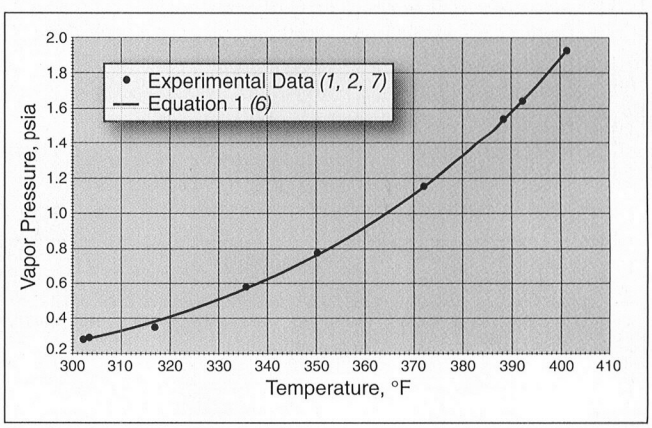
Solvent regeneration removes heavy material evolving from solvent decomposition and the accompanying unit corrosion. Feed impurities, such as chlorides, can also be removed by regeneration.

Almost all sulfolane regeneration in extraction units is accomplished by vacuum stripping or fractionating a lean

Table. Sulfolane properties *(6, 9)*.

Technical Name	Tetrahydrothiophene 1,1-dioxide
Formula	$C_4H_8O_2S$
Molecular Weight	120.171
Normal Boiling Point, °F	549.14*
Freezing Point, °F	83.2**
Density, lb/ft³	
@ 86°F (30°C)	78.61
@ 95°F	78.39
@ 122°F	77.63
@ 302°F	72.22
Viscosity, cP	
@ 86°F (30°C)	10.3
@ 212°F	2.5

* Decomposition begins before reaching this temperature.
** Slightly lower freezing point reported in air: 81.3°F *(9)*.



■ Figure 4. Vapor pressure of pure sulfolane as a function of temperature.

solvent slipstream taken from the aromatics stripper bottoms *(1, 4, 5, 11, 12)*. Regeneration is often semi-batch, in that the regenerator is periodically shut down for cleanout. Figure 3 depicts regeneration in block diagram format (steam, if any is used, is not included in the figure). Regenerator charge rates are typically between 3 gal/min and 15 gal/min. The overwhelming majority of material fed to the regenerator is sent overhead, which makes it difficult to think of them as strippers, although that is what they are often called.

Clean sulfolane is taken overhead and returned to the bottom of the aromatics stripper as a vapor, or returned to the lean solvent feeding the extractor after being condensed. Particulates, polymers, tars and acid salts are left behind after the sulfolane is vaporized in the regenerator. The regenerator bottoms is heavy waste that is typically withdrawn intermittently since its flowrate is very low. Some regenerator vessels are designed with a bottoms volume large enough to permit accumulation of this waste.

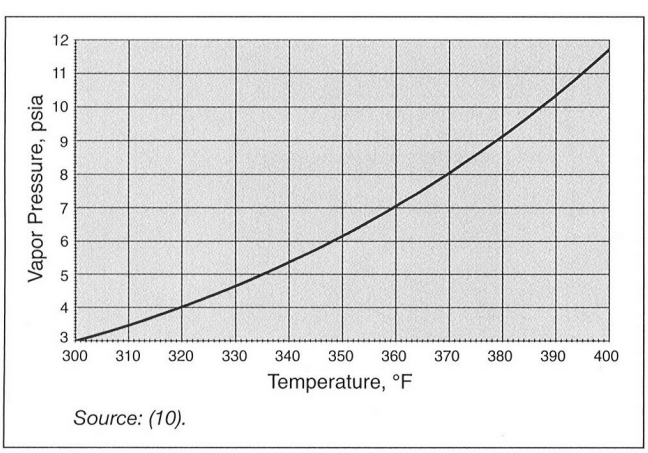
Sulfolane vaporization is complicated by its physical properties. The low vapor pressure that makes sulfolane a good extraction solvent raises regeneration temperatures to near decomposition values, and certainly to a range at which corrosion is known to occur in other areas of the unit. Additionally, sulfolane freezes at a high temperature, making the recovery of regenerated solvent more difficult if it must be condensed (although the freeze point declines with increasing water content). The solids-bearing regenerator residue freezes at a temperature higher than sulfolane, complicating the handling of regenerator bottoms.

The table details sulfolane's properties, and Figure 4 depicts its vapor pressure as described by Eq. 1 *(6)* and lab data *(1, 2, 7)*:

$$VP = 0.145038 \times 10^{[27.8073 - 4350.7/T - 6.5633 \times \log 10(T)]} \quad (1)$$

where VP = vapor pressure, psia and T = temperature, K.

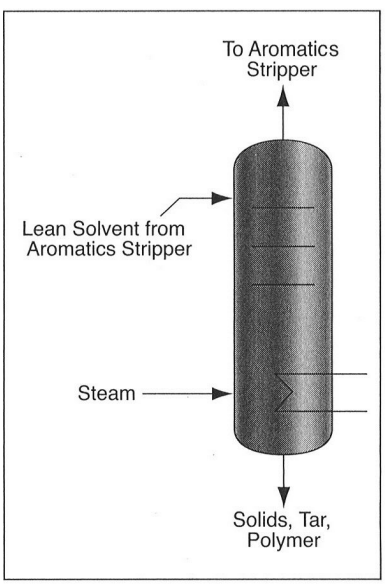
Lean solvent from the aromatics stripper bottoms contains a small amount of water, typically 0.3–0.5 wt%, although it can be higher. This significantly boosts the vapor pressure above that of pure sulfolane (Figure 5). However, lean-solvent vapor pressure without water present may actually be lower than that of pure sulfolane due to the presence of heavy components. Once in the regenerator, the small amount of water in the lean solvent is quickly driven off. The vaporization temperature of the sulfolane and heavies that are left behind increases.



■ Figure 5. Vapor pressure of sulfolane containing 0.3 wt% water.

Steam-assisted regenerator

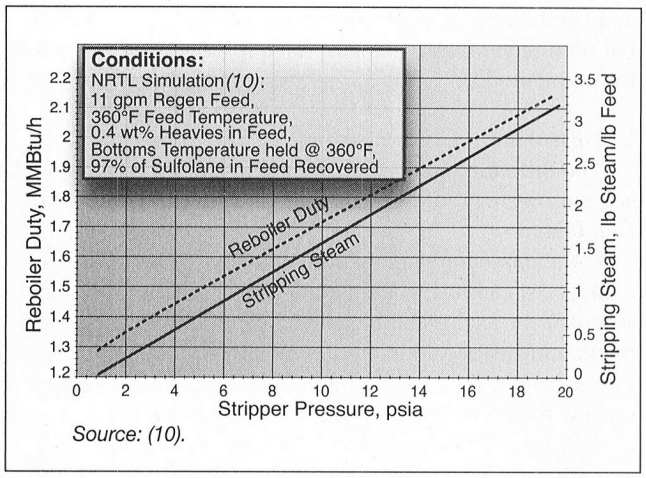
To reduce the regeneration temperature, or to operate at the same temperature but at higher pressure, steam can be used to lower the sulfolane partial pressure (Figure 6). Lower regeneration temperatures reduce solvent degradation and corrosion, while higher pressures reduce operating costs and decrease equipment size. Operating pressures of steam-assisted regenerators are usually set so that the overhead vapor directly feeds into the aromatics stripper, thus eliminating the need for separate vacuum and condensing systems. Steam-assisted regenerators (described in more detail in Refs. 4, 5, 11 and 12) usually include a reboiler, typically of a stab-in design (*i.e.*, mounted directly to the vessel), to maintain the temperature of the column, which is cooled by vaporization. Stab-in reboilers are troublesome in this service. If they fail due to corrosion, they are difficult to remove, and they interfere with interior column cleaning and work during turnarounds.



■ Figure 6. Steam-assisted regenerator.

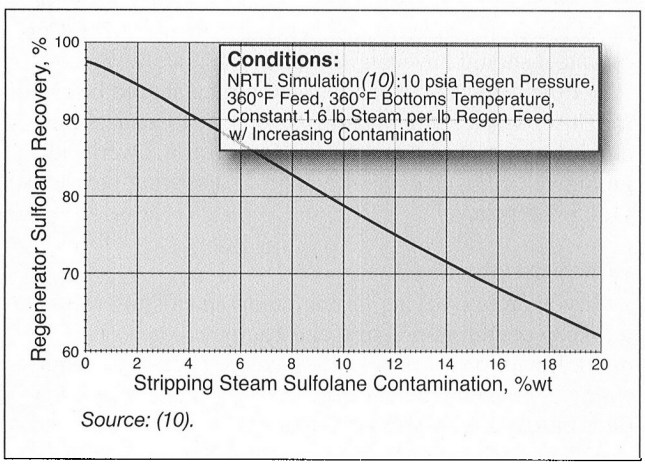
Figure 7 plots estimated operating conditions for a steam-assisted regenerator, assuming the use of pure steam. This is often impractical. Adding fresh steam increases variable costs, and it upsets the unit's water balance. Regenerator steam is typically supplied by vaporizing water collected from unit accumulators and from the raffinate water wash. This collected water contains some sulfolane, which when it contaminates the steam has a significant effect on regenerator operation (Figure 8).

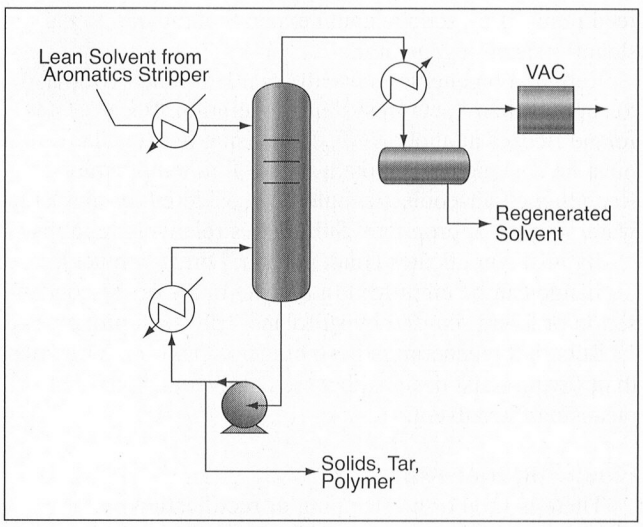
Design and operation of steam-assisted regenerators is also complicated by the hydraulics of column internals. The material balance in Figure 3 illustrates the problem: The column bottoms flow is a very small fraction of the



■ Figure 7 (above). Effect of operating pressure on steam-assisted regeneration.

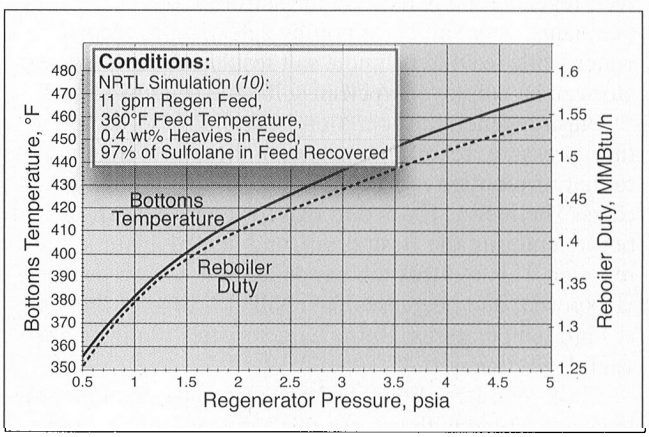
■ Figure 8 (below). Effect of sulfolane contamination in assist-steam on sulfolane recovery.





■ Figure 9 (above). Reboiled regenerator.

■ Figure 10 (below). Effect of reboiled regenerator operating pressure on reboiler duty and bottoms temperature.



feed. Maintaining effective vapor/liquid contact throughout all the trays is difficult with the wide liquid flow range. There is a large risk of blowing flood (vapor sweeping the liquid upward) on the bottom trays. A bubble-cap design is likely needed for the bottom trays and their low liquid flow. Picket fence weirs are sometimes another option. Both of these designs, though, will collect particulates in this fouling service where the liquid is known to contain solids. Some regenerators do not use tray outlet weirs for this reason, but instead employ baffle trays. Sieve trays are also preferred over valve trays in this fouling service.

While steam-assist regenerators are technically feasible, they are difficult to operate effectively due to the problems discussed above.

Reboiled regenerator

Without steam-assist, sulfolane can be regenerated in a reboiled column (Figure 9), although at a lower pressure. Figure 10 provides estimated reboiled regenerator conditions. The required reboiler duty is similar to that required for the steam-assisted regenerator.

Reboiled regenerators typically have forced reboilers, and employ a reboiling medium at a temperature as low as possible to minimize solvent decomposition. The pumped reboiler is necessary to reliably feed the viscous, polymeric, solids-laden regenerator bottoms, and to improve reboiler heat-transfer coefficients, thus permitting the use of the lowest-temperature heat source. The reboiler outlet temperature rises as the bottoms heavies concentration increases. Waste is withdrawn when reboiler capacity is expended, or when a temperature target is reached.

Because feed vaporization occurs primarily in the reboiler, the tray liquid flowrates across the column are fairly constant, simplifying tray design.

Reboiled regenerator operating pressures are lower than any other part of the extraction unit. They require their own vacuum system. Pressures lower than the steam-assist design mean comparatively larger equipment. The reboiler

feed pump is an added capital expense compared to the steam-assisted regenerator.

Reboiled regenerators usually condense their overhead to support their vacuum system's operation. Because sulfolane freezes at about 83°F, condensing heat exchangers must be designed to maintain higher film temperatures. Recirculated air-coolers should be considered, or tempered water may be appropriate. Sulfolane's relatively high viscosity also complicates condensation. Direct-contact heat exchange can be employed to obviate many of the condensation problems caused by sulfolane's physical properties.

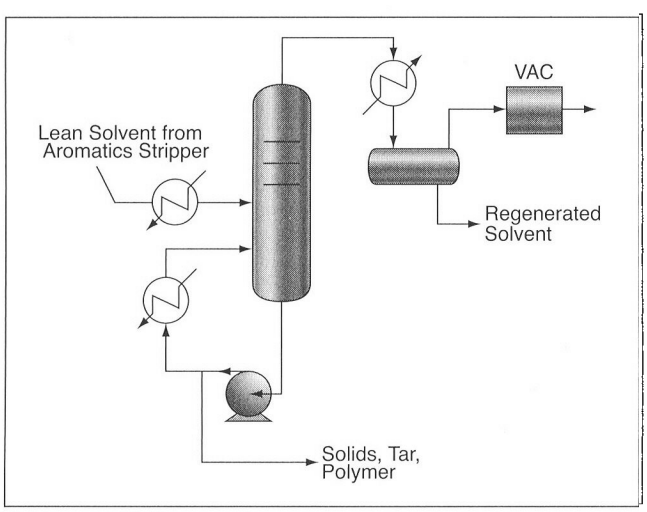
Reboiled regenerators have higher capital requirements than steam-assist designs, but they are very effective at cleansing the solvent.

Flash regenerator

There is little or no stripping or rectification taking place in the flash regenerator. The feed contains a large amount of sulfolane to be recovered, and a small concentration of heavy, essentially nonvolatile impurities. In effect, regeneration is flashing the sulfolane out of the contaminants, very similar to boiling salt water to recover water while leaving behind a salt residue. A flash regenerator can be employed to clean sulfolane (Figure 11).

Flash regenerator operation is similar (*e.g.,* temperature, pressure, reboil duty, vacuum, heat exchange issues) to that of reboiled regenerators except that there are no trays. The feed is flashed in two (or more) stages, heated before entering the flash drum, and heated again in the reboiler. This reduces the temperature to which the feed is exposed, and decreases the residence time of the feed at high temperatures. Both characteristics diminish solvent degradation.

Flash reboilers eliminate the design and operating problems associated with trays in this service: fouling, corrosion and liquid/vapor ratio variation. With effectiveness and capital requirements similar to reboiled regenerators, but with fewer disadvantages, flash regeneration is the preferred method.



■ Figure 11. Flash regenerator.

Equipment

The difficult and specialized processing associated with solvent regeneration warrants the following equipment design features:

- *Vacuum equipment.* Steam eductors can be used to generate vacuum. If rotating equipment is employed, ensure that the seal gland has a positive pressure to eliminate oxygen intrusion (double seals are often used).
- *Flanges.* Utilize minimum 300-lb flanges in vacuum service to reduce the potential for oxygen intrusion.
- *Pumps.* The reboiled and flash designs include difficult pump services. Reboiler feed or regenerator bottom pumps should be designed for slurry service. Ensure a positive gland pressure to exclude oxygen (double seals are often used).
- *Materials.* Stainless steel and duplex stainless steel resist the corrosive/erosive regenerator environment. Carbon steel should have augmented corrosion allowances.
- *Pipe velocities.* Reboiler feed piping should be sized for slurry service with a 3–4 ft/s velocity to keep solids moving and reduce the potential for erosion. Overhead piping velocities may be very high at operating pressures of 0.5–1.5 psia.

Which to choose?

If you are modifying or upgrading an existing regenerator, keep operating pressure and equipment aspects in mind. Lower pressure delivers lower temperature, diminishing degradation and corrosion. Equipment design features enhance reliability and operability.

If you are constructing a new regenerator, the primary decision is whether to use steam or not. Operationally and thermodynamically, this is just not a good steam "stripping" application. Choose a low-pressure reboiled or flash design based on an economic evaluation. Non-steam designs will likely cost more, but you'll reap the benefits in cleaner solvent.

Other sulfolane regeneration means are being studied or employed. These include packed beds *(3),* two-stage distillation *(13)* and ion exchange *(14).* None of these methods are currently in widespread use. However, two-stage distillation is applied when both light and heavy contaminants must be cleaned from the solvent.

Closing remarks

Solvent regenerators are complex to design, operate and maintain. The rewards of effective solvent regeneration are, in part, unpleasant: a high freeze-point stream of tar and solids. At times it seems the difficult task is not worth the payoff. But the other rewards are more attractive: higher solvent power, diminished unit fouling,

and reduced corrosion. The absence of problems is less tangible than the effort required to overcome the obstacles to effective regenerator operation. Keeping these problems in abeyance, though, contributes greatly to the bottom line in higher yields, lower variable costs, reliable operation and unit safety. Invest in the needed resources to make solvent regeneration work for you. CEP

DONALD F. SCHNEIDER is president of Stratus Engineering, Inc., (PMB 339, 2951 Marina Bay Dr. #130, League City, TX 77573; Phone: (281) 335-7138; E-mail: dfsstratus@aol.com; Website: www.stratusengr.com). Previously, he worked as a senior engineer for Stone and Webster Engineering, and as an operating and project engineer for Shell Oil Co. He holds a BS from the Univ. of Missouri-Rolla, and an MS from Texas A&M Univ., both in chemical engineering. He has authored or coauthored over a dozen technical papers and articles, is a member of AIChE, and is a registered professional engineer in Texas.

Literature Cited

1. **Deal, G. H., *et al.,*** "A Better Way to Extract Aromatics," *Petroleum Refiner,* **38** (9), pp. 185–192 (Sept. 1959).
2. **Steele, W. V., *et al.,*** "Vapor Pressure, Heat Capacity, and Density along the Saturation Line, Measurements for Cyclohexanol, 2-Cyclohexen-1-one, 1,2-Dichloropropane, 1,4-Di-*tert*-butylbenzene, (±)-2Ethylhexanoic Acid, 2-(Methylamino)ethanol, Perfluoro-*n*-heptane, and Sulfolane," *Journal of Chemical Engineering Data,* **42** (6), pp. 1021–1036 (1997).
3. "Session IV, Question 30," 1999 NPRA Question and Answer Session on Refining and Petrochemical Technology, National Petrochemical Refiners Association (2000).
4. **Huggins, R. L.,** "Sulfolane Extraction of Aromatics," Presented at AIChE Spring National Meeting, Houston, TX (Mar. 1977).
5. **De Graff, R. R.,** "Aromatic Hydrocarbon Recovery Process," United States Patent No. 3,466,345 (Sept. 9, 1969).
6. **Riddick, J. A., *et al.,*** "Organic Solvents Physical Properties and Methods of Purification," 4th Ed., John Wiley & Sons, New York, pp. 686, 1110 (1986).
7. **Jordan, T. E., and F. Kipnis,** "Solubility Characteristics of Sulfones," *Industrial and Engineering Chemistry,* **41** (11), pp. 2635–2637 (Nov. 1949).
8. **Wasmus, S., and W. Vielstich,** "Electro-Oxidation and Reduction of Dimethysulfoxide and Sulfolane in Aqueous Acid Solution — An On-line MS Study," *Electrochemica Acta,* **38** (2/3), pp. 175–183 (1993).
9. "Shell Sulfolane-W," Technical Bulletin, Shell Chemical Co. (Apr. 1984).
10. **Yu, Y-X., *et al.,*** "Isobaric Vapor-Liquid Equilibria and Excess Volumes for the Binary Mixtures Water+Sulfolane, Water+Tetraethylene Glycol, and Benzene+Tetraethylene Glycol," *Journal of Chemical Engineering Data,* **45** (4), pp. 570–574 (2000).
11. **Asselin, G. F.,** "Aromatic Hydrocarbon Separation Via Solvent Extraction," United States Patent No. 4,058,454 (Nov. 15, 1977).
12. "Aromatics and Derivatives — Suloflane Process," UOP LLC paper 2699C-22 899ADIV (1999).
13. **Yeary, D. L.,** "Low Color, Low Turbidity Sulfolane," United States Patent No. 5,223,101 (June 29, 1993).
14. **Lal, K. J., *et al.,*** "Process for the Purification or Regeneration of Contaminated or Spent Process Sulfolane," United States Patent No. 5,053,137 (Oct. 1, 1991).

Canadian Gas Treating Solvent Quality Control – Unique Challenges

By Steve Carlson, Steve Canter, and Jim Jenkins

CCR Technologies Ltd.
11375 West Sam Houston Pkwy South
Suite 201
Houston, Texas 77031

ABSTRACT

Unusual gas compositions, harsh weather conditions, and remote producing locations have posed significant problems for the Canadian Gas Treating Industry. A few amine types, including DEA, MDEA, and Sulfinol-D™ are widely used in Canadian gas treating facilities. Process conditions cause these amines to degrade over time, with each amine type producing a unique set of degradation products. The most common of these degradation products are discussed, as are their potential effects on gas treating performance. The importance of controlling *total solvent quality*, rather than just controlling Heat Stable Salt levels, is addressed. Canadian reclaiming case studies are used to explore removal of undesirable compounds from selected solvents.

INTRODUCTION

The Canadian Gas Processing Industry is recognized the world over for its expertise in gas treating and sulfur recovery. This expertise has been achieved by meeting the unusual challenges encountered in the region. Extremely sour gas, distinctive H_2S/CO_2 ratios, remote locations, harsh weather conditions, and stringent environmental regulations are among the hurdles that have been overcome by Canadian gas processors.

In this paper, we will look at the gas treating solvents that, because of their particular features and benefits, are commonly used in the region. Gas treating plant operators are well aware of the potential problems posed by the gradual accumulation of Heat Stable Salts (HSS) that commonly occurs in virtually all amine systems. There is less of an awareness, however, of other types of amine system contaminants and their potential effects on plant operations. We will examine degradation products found in each of the solvents in common use in Canada; a topic that has received little attention in the literature. The importance of monitoring and controlling *total solvent quality*, as opposed to monitoring and controlling only HSS, will be explored.

Of course, once the operator becomes aware of all of the undesirable components that may be in an amine solution and of the problems that may result from them being there, the obvious question is “how do I get them out of my amine solution?” This paper presents reclaiming case studies from Canadian gas plants that demonstrate the effectiveness of removing degradation products from selected solvents using vacuum distillation.

SOLVENT CHOICE DRIVEN BY GAS COMPOSITION

Solvent selection for gas treating applications is typically driven by the inlet gas composition and treated gas specifications. H_2S, CO_2, Carbonyl Sulfide (COS), and mercaptans are the constituents in the gas that generally govern solvent selection. However, other considerations that must be taken into account when selecting a gas treating solvent include hydrocarbon solubility, special degradation considerations (e.g. if there is oxygen in the gas) and ease of reclaiming to remove potential degradation products. Solvents commonly employed in the industry are; MEA, DGA®, DEA, DIPA, MDEA, formulated MDEA solvents, Sulfinol-M™, and Sulfinol-D™. Just as each of these solvents has unique gas treating characteristics, each one also has unique degradation tendencies. The remainder of this paper describes common degradation products in these solvents, and uses Canadian reclaiming case studies to address removal of the undesirable compounds.

CONTAMINANTS AND DEGRADATION PRODUCTS - DEFINED

Heat Stable Salts (HSS) and their effects on amine system performance have been addressed extensively in the literature and are well understood by the gas treating community. HSS are not the only undesirable constituents that may be present in an amine solution, however. Rather than focusing on HSS, we will look at the other undesirable constituents and at the total level of all undesirable components (including HSS) in a solution. We will refer to the total level of contaminants and degradation products in the solution as the ***residue*** of the solution. The residue is comprised of material that is generally not considered part of a healthy gas treating solution; i.e. anything that is not free (active) amine or water. This residue, as equation 1 shows, is easy to calculate and encompasses all of the contaminants and degradation products present in the sample.

$$\text{Wt\% Residue} = 100 - \text{Wt\% Free Amine} - \text{Wt\% Water} \quad (1)$$

The residue is the total level of contaminants and degradation products present in the sample. Contaminants and Degradation Products may be defined as follows:

Contaminants

Contaminants are items that enter the process and "pollute" the amine. These items would generally include solids/particulates, hydrocarbon, process chemicals, strong cations (sodium), and HSS (from their precursors entering with the gas).[1]

Degradation Products

Degradation Products are contaminants in solution that are derived from reactions with the base amine molecule itself, where the molecule is broken down or changes chemical form. Many of these compounds are the result of irreversible degradation of the base amine molecule; ethylenediamine derivatives (THEED in the case of DEA and HEEU in the case of MEA) would be examples of this. Some of these compounds are the results of a reversible reaction or chemical equilibrium with the base amine molecule; formamides in the case of primary and secondary amines and BHEEU in the case of DGA® would be examples of this.

For optimized unit operations, it is important to know and understand the total level of residue including all contaminants and degradation products. It is also important to understand the effects of this residue on unit operations and on corrosion rates to provide a basis for evaluating reclaiming options.

AMINE SPECIFIC DEGRADATION PRODUCT ANALYSIS

While Heat Stable Salts (HSS) are common to all amine solvents, degradation products are solvent-specific. [2,8,15,16] A description of common degradation products found in various gas treating solvents follows.

MEA

1. Formamides

N-formyl amines (formamides) are degradation products generally found in gas treating solutions that are based on primary and secondary amines.[3] Under certain conditions primary and secondary amines react with the formic acid in solution (via dehydration) to form n-formyl amines.

The data from process solutions containing formate as a HSS anion show that the following equilibrium relationship exists in the solution between the formate HSS and the n-formyl MEA (MEA-F).[4]

$$\text{Formic Acid} + \text{MEA} \Leftrightarrow \text{MEA-F} + \text{Water} \quad (2)$$

Since the above equation represents equilibrium, it is also possible to hydrolyze MEA-F back into MEA and formic acid. The heat and water present in the stripper of the amine unit will generate a new equilibrium if removing one of the above components disturbs the balance of the equation.

2. HEED

Hydroxyethylethylenediamine (HEED) is a well-known degradation product of MEA from reactions with CO_2. There is a wealth of literature on the reaction mechanisms and the corrosive nature of HEED.[1] While much of the literature has focused on MEA in CO_2 service only, HEED has been found in many combined systems treating H_2S and CO_2.

3. HEEU

Hydroxyethylethyleneurea (HEEU) is a degradation product of MEA that is not that well known since most of the literature has focused on degradation in CO_2 service. HEEU is formed via the same reaction pathway as HEED when COS is present in the gas.[6]

4. Polymers

We generally find polymers when HEED is present in MEA systems treating H_2S and CO_2. These polymers are formed from the reaction of HEED with MEA molecules to make longer chained ethylenediamines.[7]

DGA®

1. Formamides

Same as MEA above.

2. BHEEU

N,N bis(hydroxyethoxy-ethyl)urea (BHEEU) is an inert degradation product formed in the presence of COS and CO_2.[6] Formation of BHEEU can be reversed by thermal reclaiming.

3. Morpholine

This is an inert degradation product that, while rare, can occur when the solution is subjected to high temperatures.[5]

DEA

1. Formamides

Same as MEA above.

2. THEED

Tris-hydroxyethyl ethylenediamine (THEED) is a well-known degradation product of DEA from reactions with CO_2. There is a wealth of literature on the reaction mechanisms and the corrosive nature of THEED.[1,6] While much of the literature has focused on DEA in CO_2 service only, THEED has been found in combined systems treating H_2S and CO_2.

3. Bis-HEP

Bis-hydroxyethyl piperazine (bis-HEP) is a well-known degradation product of DEA from reactions with CO_2. There is a wealth of literature on the reaction mechanisms of bis-HEP.[1,6] While much of the literature has focused on DEA in CO_2 service only, bis-HEP has been found in combined systems treating H_2S and CO_2.

4. MEA

In the presence of certain chemical compounds (oxygen) or intermediates, it is possible to degrade or break down the DEA molecule to simpler amines. Monoethanolamine (MEA) is one of the simpler amines that may be formed from DEA degradation. It is important to monitor the level of MEA in the circulating DEA system due to Amine Stress Corrosion Cracking (ASSC) concerns associated with MEA. MEA will also generally further degrade in the system leading to concerns with the compounds reviewed above.

5. Bicine

Bis-(hydroxyethyl) glycine (Bicine) is a degradation product formed in the presence of DEA and unstable chemical intermediates, and is considered corrosive.[8,17]

6. Polymers

We generally find polymers when THEED is present in DEA systems treating H_2S and CO_2. These polymers are formed from the reaction of THEED with DEA molecules to make longer chained ethylenediamines.[7]

DIPA

1. Formamides

Same as MEA above.

2. DIPA-OX

Hydroxypropylmethyloxazolidone (HPMO or DIPA-OX) is a well-known degradation product of DIPA from reactions with CO_2. There is a wealth of literature on the reaction mechanism of DIPA-OX.[1,6,10] The literature also states that DIPA-OX is the endpoint of DIPA degradation in CO_2 service (due to steric hindrance), so polymers of DIPA are not *supposed* to be formed like they are with MEA and DEA.

MDEA

1. MDEA Fragments

MDEA in Tail Gas Treating units (TGTU), Acid Gas Enrichment units (AGE), and in some main amine systems should be monitored for MDEA fragments. These include MMEA, DEA, Bicine and C2+ HSS anions.[9] It is also important to note that as

ethanolamines (from MDEA degradation) accumulate in the solvent, they will generally undergo further degradation to compounds listed in the above sections. The presence of these primary and secondary amines may affect the gas treating selectivity of the amine solution.

2. Special Considerations For Formulated MDEA

Depending upon the formulating agent, MDEA may need to be monitored for degradation products for the ethanolamines listed above. We recommend discussing this with your amine supplier if operating problems are experienced, or if analytical results indicate low sample recovery (large amounts of unidentified components).

Sulfinol-D™

1. Formamides

Same as MEA above.

2. DIPA-OX

Same as DIPA above.

3. Dimers

The literature states that steric hindrance prevents further degradation of DIPA-OX to diamines ("dimers"). However, we generally do find dimers in Sulfinol-D systems treating H_2S and CO_2. These "dimers" are similar to the diamines found in MEA and DEA systems, and are likely formed via the same pathway.

4. Polymers

We generally find polymers when dimers are present in systems treating H_2S and CO_2 utilizing Sulfinol-D. These polymers are formed by the reaction of a dimer with a DIPA molecule (analogous to diamines of MEA and DEA reacting further to make longer chained ethylenediamines).

5. MIPA

In the presence of certain chemical compounds (oxygen) or intermediates, it is possible to degrade or break down the DIPA molecule to simpler amines. Monoisopropanolamine (MIPA) is one of the simpler amines that may be formed from DIPA degradation.

6. TIPA

Triisopropanolamine (TIPA) may be found in systems treating H_2S and CO_2 utilizing Sulfinol-D, when evidence of oxygen degradation is present. Literature shows that when amines degrade they generally form simpler amines, but sometimes these simpler amines react with the base amine molecule (or others) to form a more complex amine.[11]

7. Others

Since Sulfinol-D™ is a formulation of DIPA and 1,1-Dioxidetetrahydrothiophene (Sulfolane), we typically find other degradation products in the solution that are attributable to the degradation of sulfolane when oxygen is present in the treated gas. These compounds are also generally considered corrosive.[10,12,13]

Sulfinol-M™

1. MDEA Fragments

As with MDEA in Tail Gas Treating units (TGTU), Acid Gas Enrichment units (AGE), and in some main amine system service, Sulfinol-M should be monitored for MDEA fragments. These include MMEA, DEA, Bicine and C2+ HSS anions.[9] It is important to note that as ethanolamines (from MDEA degradation) accumulate in the solvent, they will generally undergo further degradation to compounds listed in the above sections. The presence of these primary and secondary amines may also affect the gas treating selectivity of the amine solution.

2. Others

Since Sulfinol-M™ is a formulation of MDEA and 1,1-Dioxidetetrahydrothiophene (Sulfolane), we typically find other degradation products in the solution that are attributable to the degradation of sulfolane when oxygen is present in the treated gas. These compounds are also generally considered corrosive.[10,12,13]

IMPORTANCE OF AMINE BALANCE

It is very important to calculate and understand the amine balance from the complete analysis of the circulating solvent. This practice will allow you to check the completeness of the sample analysis and to characterize some of the unknown compounds in the solution. The amine balance may indicate a need for further analysis or it may provide clues to explain operational issues.[18]

Excess Amine

An amine balance takes the measured amine strength (alkalinity) and subtracts the actual amount of the desired amine type present in solution (the amine specifically identified by more sophisticated analytical techniques). In DEA systems, for example, you will take the measured (titrated) amine strength and subtract out the identified (by GC) DEA in the sample. The excess amine is material that has base strength, but is not a DEA molecule. Certain degradation products of DEA (THEED and Bis-HEP) have base strength but do not perform as well as DEA in removing acid gas.[7] (THEED is also considered corrosive, so there are additional concerns with it.) When reclaiming DEA systems these degradation products are removed, thus reducing the titrated base strength of the solvent. If the concept of excess amine is not well understood, this reduction in base strength may be incorrectly interpreted as a loss of DEA. In reality, degradation products with base strength have been removed while the *actual* DEA strength of the solution has not changed.

Specific Example – Sulfinol-D

Table 1 shows a partial solvent analysis from a Sulfinol-D™ solution. We can see that the alkalinity of the sample (titrated base strength) is approximately 36 wt%. More detailed analysis shows that MIPA, DIPA, and Dimers (diamines) are the individual species contributing to the total base strength. Approximately 26.9 wt% DIPA, the desired amine type, is present in the sample. About 4.4 wt% MIPA (resulting from DIPA degradation caused by levels of oxygen in the feed gas ranging from 10 to 100 ppm) is also present in the sample. MIPA will participate in acid gas removal, and will not be removed by vacuum

distillation in a single pass. Another 4.7 wt% of the solution is "Dimers", which are undesirable degradation product that will be removed by vacuum distillation. The removal of the Dimers during reclaiming will result in a reduction in titrated base strength of 4.7 wt%. It is important to note that this drop in base strength is due to degradation product removal and not due to loss of useful amine, because some plant operators have claimed large solvent losses when Sulfinol-D™ has been reclaimed.[12] We can see from this example that the pre-reclaiming DIPA level could be perceived to be higher than it actually is because of the presence of degradation products possessing base strength. This an important phenomenon to understand when planning for and evaluating the results of a reclaiming job.

Table 1

Base Strength (alkalinity)	**36 Wt%**
MIPA, wt%	4.4
DIPA, wt%	26.9
Dimers, wt%	4.7
Total, wt%	36.0
Excess Base vs. DIPA/MIPA	*4.7*
Perceived DIPA Loss	***4.7***

CASE STUDIES

The following three case studies show some interesting solvent quality control challenges.

Gas Plant Utilizing Sulfinol-D

A gas plant utilizing Sulfinol-D was experiencing corrosion and some operational issues caused by high solvent viscosity. Since the level of HSS in the solution was not particularly high, the plant operator decided to look at other compounds in the solution that could be contributing to the corrosion and viscosity concerns. The sample analysis of the original solution (Feed) is listed in Table 2. These data show that there were significant levels of Dimers (6.48 wt%) and Others (from Sulfolane degradation) (3.74 wt%). The operator concluded that both of these compounds could potentially be increasing the corrosive nature of the solvent, and could be affecting the viscosity by displacing water from the solution.[14] The operator also concluded that these compounds were the result of oxygen contamination in the gas being treated.

The operator wanted to remove as much of the contamination as possible using CCR's vacuum distillation in a batch (once-through) mode. The results reported by CCR's contracted lab are listed in Table 2. The operator contracted a different third party laboratory to analyze the baseline sample and the final product to verify the reclaiming results, and these data may be found in Table 3.

Table 2

Sample Analysis Before And After Single Pass Through Vacuum Distillation Unit

	Feed	**Product**	**Removal**
Strong Acid Anions, wt%	0.39	0.02	96%
Strong Cations, wt%	0.11	0.00	98%
DIPA-OX, wt%	4.52	1.09	76%
Dimers, wt%	6.48	0.00	99+%
TIPA, wt%	1.17	0.51	57%
Other, wt%	3.74	0.92	75%
Total Residue, wt%	16.76	2.56	85%

Both sets of data show good contaminant removal on a batch basis through the vacuum distillation unit. The operational parameters of the vacuum distillation unit were improved during the course of the job with the final analytical results verifying the effectiveness of the unit optimization. In particular it should be noted that the DIPA-OX removal efficiency improved as the job progressed. (Because the boiling points of DIPA and DIPA-OX are fairly close together, DIPA-OX is more difficult to remove by distillation than most other common degradation products. Therefore, a high removal efficiency of DIPA-OX is a good indicator that the CCR equipment operating parameters are optimized). While some plants utilizing Sulfinol-D™ employ their own reclaimers, many find them troublesome and a source of high DIPA losses. The literature gives specific operating requirements for "conventional" reclaiming of DIPA-OX as 50 mm Hg, 350 °F, utilizing 14 trays with direct steam sparging. It is easy to see why this unit operation may be quite troublesome, and why mobile vacuum distillation technology may be a preferable alternative.[6] The apparent low removal efficiency of TIPA (Table 2) is explained by the relatively low repeatability of the TIPA concentration by the lab. The methodology used to analyze for TIPA can be expected to give measurement error at low levels of TIPA (<1 wt%). Since this lab is not called upon to measure TIPA very often, the cost of upgrading the analytical procedure is not economically justifiable.

Table 3
Sample Analysis For Batch Reclaiming of Sulfinol-D™

	Start	End	Removal
DIPA-OX, wt%	5.20	0.20	96%
Other, wt%	9.45	0.10	99%
Total Residue, wt%	14.65	0.30	98%

Both Table 2 and Table 3 indicate that the solvent quality was greatly improved as a result of reclaiming. After the reclaiming was complete, the plant operator experienced lower corrosion rates. Solvent viscosity was also improved, resulting in better mass and heat transfer performance.

Gas Plant Utilizing Formulated MDEA

A gas plant utilizing a formulated MDEA solvent was experiencing corrosion and some operational difficulties related to changes in the physical properties of the solvent. The level of HSS in solution concerned the plant operator and was the initial reason to look at reclaiming. However, a detailed analysis noted that there were a few other contaminants/degradation products that needed to be removed as well. See Table 4 below.

The plant operator selected an target of 500 ppm for the Bicine in solution and also wanted to remove as much of the polymeric material as possible. The operator suspected that the Bicine was due to intermittent oxygen ingress to the system via the gas being treated and that the polymers were due to degradation of their old MDEA formulation. Batch vacuum distillation reclaiming during a quick plant outage was judged to be the most efficient approach. The operator had some concerns, which proved to be unfounded, as to whether the contaminants could be removed in a single pass through the

Table 4
Sample Analysis Before And After Single Pass Through Vacuum Distillation Unit

	Feed	Product	Removal
Strong Acid Anions, wt%	1.24	<0.01	99+%
Strong Cations, wt%	0.41	<0.01	99+%
Polymers, wt%	2.27	0.13	94%
Bicine, wt%	0.29	0.05	83%
Other, wt%	0.45	<0.01	99+%
Total Residue, wt%	5.06	0.18	96%

CCR equipment. Table 4 shows that processing removed 96% of the entire residue in the system, and reduced the Bicine to the target level.

Contaminated Glycol

Glycols are used for hydrate inhibition/gas dehydration, and for heating and cooling mediums. The type of glycol used is selected based on the features and benefits that it will provide. If these glycols become contaminated, the physical properties may change to the point that the solvent is no longer capable of performing its required function.

A gas plant using a mixture of Triethylene Glycol (TEG) and water as a heat medium, experienced a gradual buildup of Ethylene Glycol (EG) in the solution. The plant operator became concerned that the amount of EG in solution (>3%) could adversely effect the performance of the heat medium, and that the EG could degrade and cause unit reliability concerns. Table 5 below supports the operator's concerns by demonstrating that there are significant differences in the physical properties of the two glycols.

Table 5
Selected Physical Properties of EG & TEG

	EG	TEG
Boiling Point, °F (at 760 mm Hg)	387.1	545.9
Approximate decomposition Temperature, °F	329	404
Heat Capacity, J/mol*K	149.8	333.7

Clearly, the performance of the heat medium solution would be expected to change as the concentration of EG increased. The operator wanted to have the EG content of the solution reduced to less that 1 percent, and wanted to do so without interrupting plant operations. "Side stream" (on-line) vacuum distillation was selected since it could meet all of the plant's requirements while ensuring that the glycol was not degraded in the reclamation process. Table 6 shows the before and after sample results from the system.

Table 6
Sample Analysis For Side Stream Reclaiming of TEG

	Start	End	Removal
Ethylene Glycol, wt%	3.2	0.8	75%

CONCLUSION

While controlling the level of Heat Stable Salts in an amine system should remain a priority for gas treating plant operators, they must also be aware of, and control, the numerous other undesirable compounds that could also be present in the amine. The practice of monitoring and controlling all of the contaminants in an amine system is known as *total solvent quality control*. Amine degradation products are commonly found in amine systems, and can cause many of the same operational problems that may be mistakenly attributed to high Heat Stable Salt levels. Each of the amine types in common use in Canadian gas treating has its own unique set of degradation products. Like Heat Stable Salts, virtually all of these degradation products can be removed by reclaiming the amine solution using vacuum distillation technology. The other commercial reclaiming technologies (ion exchange and electrodialysis) are also able to remove Heat Stable Salts, but cannot remove many of these degradation products. Thus, using ion exchange or electrodialysis technology to reclaim a solvent will often result in only part of the *total solvent quality* problem being resolved. Resolution of the entire *total solvent quality* problem can only be accomplished if reclaiming is performed using vacuum distillation technology.

REFERENCES

1. McCullough, J. G., and R. B. Nielsen, "Contamination and Purification of Alkaline Gas Treating Solutions", Corrosion96, Paper No. 396, 1996.
2. Meisen, A., M. Abedinzadegan, R. Abry and M. Millard, "Degraded Amine Solutions: Nature, Problems and Distillative Reclamation", Proceedings of the 1996 Laurance Reid Gas Conditioning Conference.
3. Koike, et al, "N-Formyldiethanolamine: A New Artefact(sic) in Diethanolamine Solutions", Chemistry & Industry, 1987.
4. Huntsman Corporation Technical Training, "Evidence of Empirical Equilibrium Between Formate and n-Formyl Amines in Gas Treating Application", 1999.
5. Harruff, L. G., "Sadi Arabian Experience with DGA Units and Related Sulfur Plants", Proceedings of the 1998 Laurance Reid Gas Conditioning Conference.
6. Kohl, A. and R. Nielsen, "Gas Purification" 5th Edition, Gulf Publishing, Houston, 1997, pp. 236-239,261-262.
7. Holub, P. E., J. E. Critchfield and W. Y. Su, "Amine Degradation Chemistry in CO_2 Service", Proceedings of the 1998 Laurance Reid Gas Conditioning Conference.
8. Cummings, A. L., F. C. Veatch and A. E. Keller, "Corrosion and Corrosion Control Methods in Amine Systems Containing H_2S", Corrosion97, Paper No. 341, 1997.
9. Critchfield, J. E. and J. L. Jenkins, "Evidence of MDEA Degradation in Tail Gas Treating Plants", Petroleum Technology Quarterly, Spring 1999.
10. van Grinsven, P. F. A., G. J. v. Heeringen, E. C. Heyman and M. L. Dillon, "DIPA as the Preferred Solvent for Amine Treatment in Refinery Applications", Proceedings of the 1999 Laurance Reid Gas Conditioning Conference.
11. Chakma, A., and A. Meisen, "Methyl-diethanolamine Degradation – Mechanism and Kinetics", The Canadian Journal of Chemical Engineering, October 1997.
12. Kehl, T., and R. Barker, "Overcoming Operating Challenges at AEC Oil & Gas Sexsmith with Sulfinol D", Proceedings of the 2001 Laurance Reid Gas Conditioning Conference.
13. Meyers, R. A., "Handbook of Petroleum Refining Processes" 2nd Edition, McGraw-Hill, 1996, pp. 2.18-2.21.
14. Cheng, S., A. Meisen and A. Chakma, "Predict Amine Solution Properties Accurately", Hydrocarbon Processing, February 1996.
15. Rooney, P. C., T. R. Bacon and M. S. Dupart, "Effect of Heat Stable Salts on MDEA Solution Corrosivity", Hydrocarbon Processing, March 1996.
16. Liu, H. J., J. W. Dean and S. F. Bosen, "Neutralization to Reduce Corrosion from Heat Stable Amine Salts", Corrosion95, Paper No. 572, 1995.
17. Howard, M., and A. Sargent, "Operating Experiences at Duke Energy Field Services Wilcox Plant with Oxygen contamination and Amine Degradation", Proceedings of the 2001 Laurance Reid Gas Conditioning Conference.
18. Haws, R., and J. Jenkins, "Contaminant Reporting in Amine Gas Treating Service", Proceedings of the 2001 Sulfur Recovery Symposium, Vail, Colorado.

ADDITIONAL SOURCES

1. Nielsen, R. B., K. R. Lewis, J. G. McCullough and D. A. Hansen, "Corrosion in Refinery Amine Systems", Corrosion95, Paper No. 571, 1995.
2. Craig, H. L. and B. D. McLaughlin, "Corrosive Amine Characterization", Corrosion96, Paper No. 394, 1996.
3. Fan, D., L. E. Kolp, D.S. Huett and M.A. Sargent, "Role of Impurities and H_2S in Refinery Lean DEA System Corrosion", Corrosion2000, Paper No. 495, 2000.
4. Chakma, A. and A. Meisen, "Identification of Methyl Diethanolamine Degradation products By Gas Chromatography and Gas Chromatography-Mass Spectrometry", Journal of Chromatography, 457 (1998) 287-297.
5. Dawodu, O. F. and A. Meisen, "Identification of Products Resulting From Carbonyl Sulphide-Induced Degradation of Diethanolamine", Journal of Chromatography, 587 (1991) 237-246.
6. Kohl, A. and R. Nielsen, "Gas Purification" 5th Edition, Gulf Publishing, Houston, 1997, pp. 210-212, 232-269.

Appendix

MEA Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
Formamide (MEAF)	Non-Corrosive	Contaminant/Degradation
HEED	Potentially Corrosive	Degradation
HEEU	Non-Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation

MEA Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of MEAF (Slip-Stream Processing)	All
Control of MEAF (Batch Processing)	Vacuum Distillation Only
Control of HEED	Vacuum Distillation Only
Control of HEEU	Vacuum Distillation Only
Control of Polymeric Material	Vacuum Distillation Only

Best Efficiency = Batch Processing

DGA® Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
Formamide (DGAF)	Non-Corrosive	Contaminant/Degradation
BHEEU	Non-Corrosive	Degradation (Reversible)
Polymeric Material	Non-Corrosive	Degradation

DGA® Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of DGAF (Slip-Stream Processing)	All
Control of DGAF (Batch Processing)	Vacuum Distillation Only
Control/Reversal of BHEEU	Vacuum Distillation Only
Control of Polymeric Material	Vacuum Distillation Only

Best Efficiency = Batch Processing

DEA Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
Formamide (DEAF)	Non-Corrosive	Contaminant/Degradation
THEED	Potentially Corrosive	Degradation
Bis-HEP	Non-Corrosive	Degradation
MEA	ASCC Concerns	Degradation
Bicine	Potentially Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation

DEA Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of DEAF (Slip-Stream Processing)	All
Control of DEAF (Batch Processing)	Vacuum Distillation Only
Control of THEED	Vacuum Distillation Only
Control of bis-HEP	Vacuum Distillation Only
Control of MEA	Vacuum Distillation Only
Control of Bicine	Ion Exchange - Partial Vacuum Distillation
Control of Polymeric Material	Vacuum Distillation Only

Best Efficiency = Batch Processing

DIPA Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
Formamide (DIPAF)	Non-Corrosive	Contaminant/Degradation
DIPA-OX	Non-Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation

DIPA Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of DIPAF (Slip-Stream Processing)	All
Control of DIPAF (Batch Processing)	Vacuum Distillation Only
Control of DIPA-OX (Slip-Stream Processing)	All
Control of DIPA-OX (Batch Processing)	Vacuum Distillation Only
Control of Polymeric Material	Vacuum Distillation Only

Best Efficiency = Batch Processing

MDEA Contamination/Degradation In TGTU, AGE, and Combined Treating Service

HSS	Potentially Corrosive	Contaminant
MMEA	Non-Corrosive	Degradation
DEA	Non-Corrosive	Degradation
Bicine	Corrosive	Degradation
HE-Sarcosine	Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation

MDEA Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of MMEA	Vacuum Distillation Only
Control of DEA	Vacuum Distillation Only
Control of Bicine	Ion Exchange - Partial Vacuum Distillation
Control of HE-Sarcosine	Ion Exchange - Partial Vacuum Distillation
Control of Polymeric Material	Vacuum Distillation Only

Best Efficiency = Batch Processing

Formulated MDEA Contamination/Degradation In Refinery Service
Special considerations based on formulation. The compounds measured in the residue will generally be listed under the various amine listed above to aide in the evaluation.

Sulfinol-D Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
Formamide (DIPAF)	Non-Corrosive	Contaminant/Degradation
DIPA-OX	Non-Corrosive	Degradation
Dimers	Potentially Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation
TIPA	Non-Corrosive	Degradation
Others (From Sulfolane)	Potentially Corrosive	Degradation

Sulfinol-D Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of DIPAF (Slip-Stream Processing)	All
Control of DIPAF (Batch Processing)	Vacuum Distillation Only
Control of DIPA-OX (Slip-Stream Processing)	All
Control of DIPA-OX (Batch Processing)	Vacuum Distillation Only
Control of Dimers	Vacuum Distillation Only
Control of Polymeric Material	Vacuum Distillation Only
Control of TIPA	Vacuum Distillation Only
Others (From Sulfolane)	Vacuum Distillation Only

Best Efficiency = Batch Processing

Sulfinol-M Contamination/Degradation In Combined Treating Service

HSS	Potentially Corrosive	Contaminant
MMEA	Non-Corrosive	Degradation
DEA	Non-Corrosive	Degradation
Bicine	Corrosive	Degradation
HE-Sarcosine	Corrosive	Degradation
Polymeric Material	Non-Corrosive	Degradation
Others (From Sulfolane)	Potentially Corrosive	Degradation

Sulfinol-M Solvent Quality Management With Merchant Reclaiming Options
Vacuum Distillation, Ion Exchange, Electrodialysis

Control of HSS	All
Control of MMEA	Vacuum Distillation Only
Control of DEA	Vacuum Distillation Only
Control of Bicine	Ion Exchange - Partial Vacuum Distillation
Control of HE-Sarcosine	Ion Exchange - Partial Vacuum Distillation
Control of Polymeric Material	Vacuum Distillation Only
Others (From Sulfolane)	Vacuum Distillation Only

Best Efficiency = Batch Processing

APPENDIX E

National and International Research Documents

- Page Intentionally Left Blank -

No.	State	Agency	Contact	Sulfolane Information?
1	Alabama	Alabama Department of Environmental Management	Stephanie Carter, 334-270-5603 sc@adem.state.al.us Ronald Shell, Chief, Compliane & Enforcement Section, Governmental hazardous Waste Branch, Land Division, 334-271-7748, RTS@adem.state.al.us, replied via ASTSWMO - no standards	No sulfolane standards via phone conversation, sent questionnaire to be distributed
2	Arizona	Arizona Department of Environmental Quality	Donna Calderon, Drinking Water Monitoring and Protection Unit 602-771-4641 dml@azdeq.gov	No sulfolane standards via phone conversation, sent questionnaire to be distributed
3	Arkansas	Arkansas Department of Environmental Quality	Diana Kilburn, Groundwater, 501-682-0869, kilburn@adeq.state.ar.us	No sulfolane standards via phone conversation, sent questionnaire to be distributed
4	California	Northern California Society of Toxicology	Stephen M. DiZio, Ph.D. President, Northern California Society of Toxicology Performance Manager and Chief Human and Ecological Risk Office Cleanup Program Department of Toxic Substances Control 8810 Cal Center Drive Sacramento, California 95826 Phone: 916-255-6634 FAX: 916-255-6695 E-mail: sdizio@dtsc.ca.gov	No sulfolane standards Replied via email to ASTSWMO solicitation - multiple correspondences with Marlena Brewer
5	Colorado	Colorado Department of Public Health and Environment	Rick Koplitz, rick.koplitz@state.co.us	No sulfolane standards via phone conversation, sent questionnaire to be distributed
6	Connecticut	CT Department of Environmental Protection	Christine Lacas Supervising Environmental Analyst Remediation Division Bureau of Water Protection & Land Reuse CT Department of Environmental Protection 79 Elm Street Hartford, CT 06106-5127 Phone: (860) 424-3766 Fax: (860) 424-4057 Email: Christine.Lacas@ct.gov	No sulfolane standards Replied via email to ASTSWMO solicitation
7	Delaware	Delaware Department of Natural Resources and Environmental Control	Bob Schulte, Chemist, Superfund Quality Assurance, 302 395-2646	No sulfolane standards, sent questionnaire, good contact "treat like an MTBE spill"
8	Florida	Florida Department of Environmental Protection	Cynthia Christen, Drinking Water, 850-245-2211, cynthia.christen@dep.state.fl.us	No sulfolane standards via phone conversation but sent questionnaire

No.	State	Agency	Contact	Sulfolane Information?
9	Georgia	Georgia Environmental Protection Division	Bill Frechette, Watershed Protection Branch, 404-675-6232 bill_frechette@dnr.state.ga.us Alexandra Y. Cleary Program Manager Response and Remediation Program 2 Martin Luther King Jr. Drive, SE Suite 1462 Atlanta, Georgia 30334-9000 404-657-8600 (phone) 404-657-0807 (fax) alex.cleary@gaepd.org	No sulfolane standards via phone conversation but sent questionnaire, Alexandra Cleary replied to ASTSWMO email - no sulfolane standards
10	Hawaii	Hawaii Office of Environmental Quality Control	Jennifer Nikaido, Safe Drinking Water Branch 808-586-4258 jennifer.nikaido@doh.hawaii.gov	No sulfolane standards via phone conversation, sent questionnaire to be distributed
11	Idaho	Idaho Department of Environmental Quality	Mike Gregory, Boise, 208-373-0297	No sulfolane standards via phone conversation
12	Illinois	Illinois EPA	Stan Black, Community Relations, Hazardous Waste Site Cleanup, 217-785-1427 stan.black@illinois.gov Clarence L. Smith, Manager Federal Site Remediation Section Division of Remediation Management Bureau of Land Illinois Environmental Protection Agency 1021 North Grand Avenue, East Post Office Box 19276 Springfield, Illinois 62794-9276 217-524-1655 217-720-1329 BlackBerry	No sulfolane standards via phone conversation, sent questionnaire to be distributed, Clarence Smith replied no sulfolane standards to ASTSWMO email
13	Indiana	Indiana Department of Environmental Management	David Forsey, Remediation 1-800-451-6027	No sulfolane standards via phone conversation
14	Iowa	Iowa Department of Natural Resources	Mel Pins, 515-281-5918, mel.pins@dnr.iowa.gov	No sulfolane standards via phone conversation, sent questionnaire to be distributed
15	Kansas	Kansas Department of Environmental Quality	Bob Jurgens, Section Chief, Assessment and Restoration, 785-296-1914, b.jurgens@kdheks.gov	No sulfolane standards via phone conversation, sent questionnaire to be distributed
16	Kentucky	Kentucky Department of Environmental Protection	Randy Payne, Water Quality 502-564-3410; Duke York, Waste Management, 502-564-6716	no sulfolane standards, sent Duke York questionnaire

No.	State	Agency	Contact	Sulfolane Information?
17	Louisiana	Louisiana Department of Environmental Quality	Carey J. Dicharry Jr. Geologist Supervisor Remediation Services Division La. Dept of Environmental Quality 602 N. 5th Street Baton Rouge, La. 70884 Voice: 225-219-3795 Fax: 225-219-3474 Kristine L. Pintado, Environmental Staff Scientist LDEQ Office of Environmental Assessment PO Box 4314 Baton Rouge, LA 70821-4314 Phone: (225) 219-3596 email: kris.pintado@la.gov Dana Shepherd, 225-219-3421 (Norco contact)	Hot lead - Carey "dealt with a facility back in around 2000 that had a detection of Sulfolane at around 70ppb. I don't remember how or even if it was actually cleaned up or just risked out. I do know that we calculated some clean up standards for this chemical back then" Kristine replied via ASTSWMO email that LA has no sulfolane standards. Sent request for public records regarding Norco site on 4/13/10, sent questionaire
18	Maine	Maine Department of Environmental Protection	David Wright, Site Investigation and Remediation 207-287-7673 david.w.wright@maine.gov	No sulfolane standards via phone conversation but sent questionnaire
19	Maryland	Maryland Department of Environment	Pete Yencsik, p.yencsik@mde.state.md.us	No sulfolane standards via phone conversation but sent questionnaire
20	Massachusetts	Massachusetts Department of Envionmental Protection	Ken Marra, Remedial Monitoring, 617-292-5966; Catherine Finneran MassDEP Brownfields Coordinator 1 Winter Street Boston MA 02108 Phone: (617) 556-1138 Fax: (617) 292-5530 catherine.finneran@state.ma.us	No sulfolane standards, sent questionnaire
21	Michigan	Michigan Department of Environmental Quality	Jim McEwan, 517-241-1355, mcewanj@michigan.gov	No sulfolane standards via phone conversation, sent questionnaire to be distributed
22	Minnesota	Minnesota Pollution Control Agency	Thomas Clark, Groundwater, 651-757-2278, tom.p.clark@state.mn.us	No sulfolane standards via phone conversation, sent questionnaire to be distributed
23	Mississippi	Mississippi Department of Environmental Quality	Jim Hoffman, Groundwater Inquiries, 601-961-5212 Greg Jackson, Water Quality Standards, 601-961-5098; Richard Sumrall, P.E. Chemical Branch Environmental Compliance & Enforcement Division	no sulfolane standards, sent questionnaire

No.	State	Agency	Contact	Sulfolane Information?
24	Missouri	Missouri Deparment of Natural Resouces	Dennis Stinson Superfund Section Chief PO Box 176 Jefferson City, MO 573 751-1388	No sulfolane standards replied via email re: ASTSWMO
25	Montana	Montana Department of Environmental Quality	Becky Holmes 406-444-2876 Ann Kron 406-444-5824 Hazardous Waste Program	No sulfolane standards via phone conversation good contacts
26	Nebraska	Nebraska Department of Environmental Quality	James D. Harford, NDEQ/RCRA Compliance Assistance Coordinator	No sulfolane standards Replied via email to ASTSWMO solicitation
27	Nevada	Nevada Department of Environmental Protection	Jennifer Carr, Chief, Safe Drinking Water 775-687-4670 x79515	No sulfolane standards via phone conversation
28	New Hampshire	New Hampshire Department of Environmental Services	Cynthia Klevens, Drinking Water and Groundwater Bureau 603-271-3108 cynthia.klevens@des.nh.gov Gary Lynn, ORCB	No sulfolane standards via phone conversation but sent questionnaire, Gary Lynn responded to ASTSWMO email
29	New Jersey	New Jersey Department of Environmental Protection	Water Quality, Nonpoint Pollution Control, Safe Drinking Water, Water Allocation, Industrial Site Remediation, Environmental Site Assessment, Groundwater Pollution Assessment, Community Relations (contacted all above offices, but no help)	Sent inquiry to NJDEP information request
30	New Mexico	New Mexico Environment Department	Dave Cobrain, 505-476-6055, dave.cobrain@state.nm.us	No sulfolane standards via phone conversation but sent questionnaire
31	New York	NYSDEC	Jim Harrington Chief Technology Section Division of Environmental Remediation 518-402-9755 William T. Ports, P.E. Project Manager NYSDEC Division of Environmental Remediation 625 Broadway Albany, NY 12233-7014 Phone: 518-402-9667 Fax: 518-402-9020 email: wfports@gw.dec.state.ny.us	No sulfolane standards Replied via email to ASTSWMO solicitation
32	North Carolina	North Carolina Department of Environment and Natural Resources	Linda Raynor, Drinking Water, 919-715-3225	sent inquiry to NC Division of Pollution Prevention and Environmental Assistance
33	North Dakota	North Dakota Environmental Health Section	Scott Radig, Hazardous Waste Representative, Division of Waste Management, 701-328-5166, s.radig@nd.gov	No sulfolane standards via phone conversation sent questionnaire to be distributed

No.	State	Agency	Contact	Sulfolane Information?
34	Ohio	Ohio EPA	Barb Lubberger, Emergency and Remedial Response, 614-644-2924 barb.lubberger@epa.state.oh.us	No sulfolane standards via phone conversation sent questionnaire to be distributed
35	Oklahoma	Oklahoma Department of Environmental Quality	Evelina Morales, Risk Based Closure, 405-702-5100, evelina.morales@deq.ok.gov Jon A. Roberts, Env. Programs Manager Oklahoma Department of Environmental Quality Land Protection Division 707 N. Robinson Ave. P. O. Box 1677 Oklahoma City, OK 73101-1677 Ph: 405.702.5153 Fax: 405.702.5101	No sulfolane standards via phone conversation sent questionnaire to be distributed, Jon Robert replied via ASTSWMO email
36	Oregon	Oregon Department of Environmental Quality	Sheree Stewart, Drinking Water Protection Coordinator 503-229-5413 Gil Wistar 503-229-5512	No sulfolane standards via phone conversation
37	Pennsylvania	Pennsylvania Department of Environmental Protection	Lisa Daniels, Water Quality Standards, 717-787-9637 Dwayne Womer, P.E. | Chief, Permitting and Technical Support Section Department of Environmental Protection Division of Hazardous Waste Management Rachel Carson State Office Building 400 Market Street | Harrisburg, PA 17101 Phone: 717.787.6239 | Fax: 717.787.0884	No sulfolane standards via phone conversation, sent generic emails to Oil & Gas Division and Hazardous Waste Division, Dwayne Womer replied that he is distributing the email
38	Rhode Island	Rhode Island Department of Environmental Management	Neal Persenus?, Bureau of Environmental Protection 401 222-4700	No sulfolane standards via phone conversation
39	South Carolina	South Carolina Department of Health and Environmental Control	Sean Clark, Bureau of Water, 803-898-4300	No sulfolane standards via phone conversation sent questionnaire to be distributed
40	South Dakota	South Dakota Department of Environmental and Natural Resources	Bill Markley, Administrator, Groundwater Quality, 605-773-3151, billmarkley@state.sd.us	No sulfolane standards via phone conversation sent questionnaire to be distributed
41	Tennessee	Tennessee Department of Environment and Conservation	Luke Ewing, Water Supply 615-532-0191 luke.ewing@tn.gov	No sulfolane standards via phone conversation sent questionnaire to be distributed
42	Texas	Texas Commission on Environmental Quality	Greg Tipple, Technical Specialist Technical Support Section/Remediation Division Texas Commission on Environmental Quality (512) 239-2465 fax: (512) 239-2469 e-mail: gtipple@tceq.state.tx.us Ann Strahl 512-239-2500	Yes, 0.49 ppb for groundwater that could be injested, replied via ASTSWMO, fair contact
43	Utah	Utah Department of Environment and Natural Resources	Scott Everett, Toxicology Scientist 801-536-4117 Chris Bittner 801-538-6813, c.bittner@utah.gov	No sulfolane standards via phone conversation sent questionnaire to C. Bittner

No.	State	Agency	Contact	Sulfolane Information?
44	Vermont	Vermont Department of Environmental Conservation	Billy with Water Quality 802-241-3400	No sulfolane standards via phone conversation
45	Virginia	Virginia Department of Environmental Quality	Mark Alling, 804-698-4000; Durwood Willis, Remediation, durwood.willis@deq.virginia.gov, 804-698-4192; Patricia McMurray Risk Assessment Program Manager Office of Remediation Programs Virginia Department of Environmental Quality 629 E. Main St. Richmond VA 23219 Phone:804-698-4186 Fax:804-698-4234 patricia.mcmurray@deq.virginia.gov; James Barnett State Lead Program Manager Office of Spill Response and Remediation Virginia Department of Environmental Quality P.O. Box 1105 Richmond, VA. 23218 Phone: 804-698-4289 fax: 804-698-4266 email: james.barnett@deq.virginia.gov	No sulfolane standards, sent questionnaire
46	Washington	Department of Ecology	Toxics Cleanup, Craig McCormack 360-407-1793 cmcc461@ecy.wa.gov	No sulfolane standards via phone conversation sent questionnaire to be distributed
47	West Virginia	West Virgina Department of Environmental Protection	Dave Long, UST 304-926-0499 x1265, James Martin, Oil and Gas 304-926-0450	No sulfolane standards via phone conversation
48	Wisconsin	Wisconsin Department of Natural Resources, Environmental Protection	Andrew Savagian, Remediation and Redevelopment Program, 608-261-6422, andrew.savagian@wisconsin.gov; Bill Phelps, Hydrogeologist WI Dept. of Natural Resources Drinking Water & Groundwater Program (608) 267-7619; Michael D. Lemcke Groundwater Management Section Chief Bureau of Drinking Water & Groundwater Wisconsin Department of Natural Resources (*) phone: (608) 266-2104 (*) fax: (608) 267-7650 (*) e-mail: michael.lemcke@wisconsin.gov	No sulfolane standards via phone conversation sent questionnaire to both to be distributed

No.	State	Agency	Contact	Sulfolane Information?
49	Wyoming	Wyoming Department of Environmental Quality	John Wagner, Water Quality 307-777-7072 Jerry Breed, Solid and Hazardous Waste 307-777-5617	No sulfolane standards via phone conversation
50	Guam	Guam Environmental Protection Agency	Conchita San Nicolas Taitano, MSEM Air and Land Division Administrator Guam Environmental Protection Agency Post Office Box 22439 Barrigada, Guam 96921 Tel: 671.475.1658/9; Fax: 671. 475.8007 Email: conchita.taitano@epa.guam.gov	No sulfolane standards Replied via email to ASTSWMO solicitation
51	Region 8 EPA		Al Garcia, 303-312-6382	Sent questionnaire and posted email on Yahoo Pretreatment Coordinators Group
52	Virgin Islands	Department of Planning & Natural Resources, Division of Environmental Protection	www.dpnr.gov.vi/dep.htm 'dep_stcroix@vidpnr-dep.org 1-340-773-1082	Left message, no return call
53	Virgin Islands	EPA Region 2 Caribbean Islands Office	Jim Casey, 340-714-2333	Spoke on phone. Large multi-party contaminated site, remediation started around 2002 to cleanup ground and groundwater. Unknown whether sulfolane was a chemical of interest. Remediation system in use is extraction of groundwater and air stripping. No biological treatment in effect...just natural attentuation.
54	Virgin Islands	EPA Region 2 US Office	www.epa.gov/region2/waste/fshovens.htm Ariel Iglesias, iglesias.ariel@epa.gov 787-977-5890	Left message, no return call
55	EPA - RCRA	EPA RCRA	Timothy Gordon gordon.timothy@epa.gov 212-637-4167	Been in charge of Hess/Hovensa RCRA site since 1992. Knowledge of sewer leaks but not of sulfolane. Unsure whether sulfolane has been tested for in the history of refinery spills on St. Croix. Will email information.
56	California	County of Santa Barbara	Kathy Pfeiffer, 805-681-4200	Found information on samplers, laboratory, cause of spill, and concentrations for the POPCO incident.
57	California	California Department of Fish and Game	Mike Connell, 858-467-4201	Provided name of sampling company, Padre Associates, for POPCO spill.

No.	Company	Location	Notes
1	Valero Envergy Corporation	Corpus Christi, Texas	called main line (361-289-6000) on 3/31 @ 0915 inquired about sulfolane - was transferred to another line, person picked up and greeted with "sulfolane" I asked about storage and handling of sulfolane, he replied "Can't answer, have to keep my job" called main line and asked for Environmental, was transferred and left a message with environmental
2	BP	Texas City, Texas	called main line (409-942-4079) transferred to Joe Trapp, HSSE (Health, Safety, Security?, and Emergency) at 409-965-8641, joe.trapp@bp.com, He hasn't heard of sulfolane. I told him I would send him an email, but didn't.
3	Suncor Energy Products, Inc.	Montreal, Canada	called main line (514-640-8000) transferred to Environmental and left message. Elizabeth Crete (514-640-8072), ecrete@suncor.com, returned call on 4/1/10. They purchase sulfolane from Quadra Chemical phone converation on 4-13-10: sent MSDS; freezing point of their sulfolane is 48 degrees F; all tanks onsite store sulfolane under a nitrogen blanket - after sulfolane is pumped into tank, the nitrogen is applied to headspace, don't know whether it is received in drums or totes
4	Tesoro	Kapolei, Hawai'i	phone converation on 4-13-10: sent MSDS; freezing point of their sulfolane is 48 degrees F; all tanks onsite store sulfolane under a nitrogen blanket - after sulfolane is pumped into tank, the nitrogen is applied to headspace, don't know whether it is received in drums or totes,
5	Sunoco	Eagle Point, NJ	856-853-3100 main line, left message with shift superintendent on 4/14/10, Jerry left message from 856-537-6019 and said to call back after 5 ET, tried multiple times to contact Jerry but always got busy signal
6	Citgo	Lake Charles, LA	337-708-6011 main line, called on 4/14/10 - automatically transferred to Engineering/Environmental - no answer, and Engineering/Process Engineering - no answer (no way to leave messages)
7	ExxonMobil	Chalmette, LA	504-281-1212 main line, spoke with operator on 4/14/10 - they can't answer any questions or transfer me to anyone else.
8	ExxonMobil	Baytown, TX	281-834-3300 main line, never could figure out a way to speak with anyone directly, just recordings
9	Lyondell Basell	Houston, TX	713-321-4111 main line, spoke with operator, she transferred me to Kim Goodsen's voice mail - I left a message
10	Lyondell Basell	Channelview, TX	281-862-4000 main line, spoke with operator, was transferred to Don Holloway's voicemail and left a message
11	ConocoPhillips	Sweeny, TX	979-491-2200, left message with Susan Anderson
12	ConocoPhillips	Belle Chasse, LA	504-656-7711, left message with Ron Hagelund?
13	Hovensa	St. Croix, Virgin Islands	340-773-1082, spoke with Alex Morehouse, was not aware of any sulfolane spills at the refinery in his tenure since 1980.
14	POPCO	El Capitan, CA	805-968-7015, spoke with operator, he directed me to ExxonMobil corporate relating to sulfolane questions
15	Incitec Pivot	Brisbane, QLD, Australia	www.incitecpivot.com.au, spoke with Marc Habermehl, +011-61-7-3867-9538, Used to use DIPA (30% sulfolane) for removing CO2 created during fertilizer production. No longer use it due to chemical replacement costs and energy costs for heat along with EPA concerns for arsenic. Replaced with AMDEA. No known issues with spills, no limits from EPA, waste often as sludge formed in recovery process that was used as a coating agent in fertlizer.
16	Oklahoma State University	Chemical Engineering	Left message with Karen High, 1-405-744-9112, karen.high@okstate.edu, http://www.osu-ours.okstate.edu/report95/report/ceat/chemical.html
17	Novasol	Belgium	http://www.novasol.be, Kristine Vosters, reach@novasol.be, 011-32-2-769-7070
18	Sumitomo Seika	Japan	https://www.sumitomoseika.co.jp, submitted online form
19	Kemicon, Casil Industries, Cadila Pharmaceuticals	India	http://www.cadilapharma.com/Group_Companies.htm, B. R. Ramanna, bramanna@cadilapharma.co.in
20	Expert Chemical Analysis Lab (ECA)	US	Jim, 858-535-9979, they test for sulfolane generally for biotech and pharmaceutical companies down to a detection limit of approximately 1ppm.
21	CAM Environmental	US	Hiram Perez,713-920-8919, very helpful
22	Astron Environmental Services	Australia	http://www.astron.com.au, Jackie Caulk, 011-61-8-9144-1679, left message
23	CCR Technologies - Alberta	Canada	Terry Trufamek, 403-543-6699, Clean up amines, is not familiar with corrosion monitoring
24	CCR Technologies - Houston	Houston, TX	John Sczesny, 281-988-5800, very helpful
25	Hendrix Group	Houston, TX	http://www.hghouston.com, David Hendrix, 281-851-1262, Little knowledge of corrosion in sulfolane extraction units
26	Texas Molecular	Houston, TX	Irma Reyes, 281-930-2525, Passed me on to Frank Marine, who did not call back
27	Acuren	Anchorage, AK	Frank Noble, fnoble@acuren.com, 907-569-5000, left message
28	MPR	US	Charles Soloman, 281-337-7424 x7125, very helpful
29	Altair Strickland	US	Whitney Strickland, wstrickland@altairstrickland.com, passed me on to subsidiary Tiger Towers
30	Tiger Towers	US	Keith Hurst, Mostly mechanical knowledge of tower replacement, not the chemical knowledge
31	Chevron Phillips - Manufacturer	US	http://www.cpchem.com, Sheila Jordan, 1-800-858-4327, No information. Suggested I talk to legal Lisa Ketaila 1-832-813-4331
32	ExxonMobil - Manufacturer	US	Complted Online Form, no response
33	LyondellBasell - Manufacturer	US	http://lyondellbasell.com, 1-888-777-0232, confirmed via phone that they do not manufacture sulfolane
34	Dow Chemical	US	1-800-447-4369, confirmed via phone that they do not manufacture sulfolane. They purchase the sulfolane from a supplier for their DIPA blend. Would not tell me the supplier name.

No.	Company	Location	Notes
35	Chevron Phillips Chemical Company, LLC	The Woodlands, Texas	David C. Miller Ph.D Western Region Sales Manager - Specialty Chemicals Chevron Phillips Chemical Company LP 2897 Tomahawk Lane, Eugene, OR 97401 Phone: 541-434-6476 Fax: 832-813-6101 email: milledc@cpchem.com Customer Service: 800-858-4327 Website: www.cpchem.com Greg Collins, Chevron Phillips Chemical Company LP, 832-813-4867 - office, 832-813-6061 - fax, 713-444-8394 - cell, collign@cpchem.com; Anthony Hailey, haileae@cpchem.com called main line (832-813-4100), got sales rep for our area named David Miller in Oregon, left message at his office: 541-434-6476, his cell is 541-915-5328 - returned call on 4/8/10 (bad reception in Soldotna) he asked why I was calling and the line went dead (hung-up or lost call?), left another message on office line on 4/12/10, spoke with David on 4/13/10, left message with Greg Collins on 4/14/10 phone conversation with David Miller on 4/13/10: Sulfolane is not regulated under 49 CFR and is shipped worldwide in drums, tanker trucks, ISO tanks, and rail cars; does not know about heated vessel use; Three grades of sulfolane produced by Cpchem: Sulfolane-A (pure, melting point of 79 degrees), sulfolane-low color (used primarily in China in flat screen manufacturing), Sulfolane-W (3% water added to decrease melting point, increase pourability); below melting point sulfolane becomes viscous - not solid, usually shipped in carbon steel vessels, It is packaged under nitrogen blanket (nitrogen blanket is standard SOP for all chemicals, not just ones susceptible to oxidation), does not know of instances of sulfolane caused corrosion, is not familiar with any fluid transfer permits/procedures
36	Sigma-Aldrich	Wisconsin	Thomas at Technical Services 1-800-231-8327, called Technical Services (1-800-231-8327), spoke with Thomas, sulfolane is transported as non-dangerous, keep away from strong oxidizers, non-dangerous good, not aware of nitrogen blanket. Sigma-Aldrich only distributes sulfolane. He couldn't tell me the manufacturer or their customers. Referred me to Safe Harbor Access Systems for handling questions
37	Alaska West Express	Fairbanks, AK	Tom Richardson 456-2223,phone converation on 4/13/10, sulfolane shipped in drums, totes, ISO tanks; not regulated by 49 CFR; do not know about fluid transfer permits/procedures, thinks AK West drops off products and client unloads them
38	Safe Harbor Access Systems	South Carolina	Bruce Pesch 1-888-257-5955, left message on 4/13/10
39	Quadra Chemicals	Montreal, CA	Rachel Torshman 1-800-665-6553, 450-510-5752, phone tage on 4/13/10 and 4/14/10

International Regulatory Body Contacts

No.	Country	Agency / Company	Website	Contact Name	Email Address	Telephone Number	Information
1	UK	UK Environment Agency		Rob		011-44-1709-389-201	Must email enquiry to email address. Potential cost for information.
				Matthew Bembridge	enquiries@environment-agency.gov.uk	011-44-8708-506-506	Not under their jurisdiction - try the drinking water inspectorate
2	UK - England & Wales	Drinking Water Inspectorate (DWI)			dwi.enquiries@defra.gsi.gov.uk	011-44-030-0068-6400	Call did not complete
3	UK - Scotland	Drinking Water Quality Regulator (DWQR)			regulator@dwqr.org.uk	011-44-0131-556-8400	Call did not complete, Expect response within 5 working days
4	UK - Northern Ireland	Drinking Water Inspectorate (DWINI)			EP@doeni.gov.uk	011-44-028-9054-6474	Call did not complete
5	Germany	Federal Environment Agency, Substances Hazardous to Water	http://www.umweltbundesamt.de/wasser-und-gewaesserschutz-e/index.htm			011-49-30-8903-4169	
6	Australia - Western	EPA of Western Australia - Contaminated Sites Program	http://www.epa.wa.gov.au/	Andre Goteau		011-61-8-6467-5600	Had never heard of sulfolane.
7	Australia - South	South Australia EPA	http://www.epa.sa.gov.au			011-61-8-8204-2000	Left Message
8	Australia - Queensland	Dept of Environment and Resource Management	http://www.derm.qld.gov.au/topics/index.html	Nina Polaschek - Aquatic Ecosystem Paul Ritchie	Nina.Polaschek@derm.qld.gov.au paul.ritchie@derm.qld.gov.au	011-61-1300-130-372	Sent survey. Nina will send on to contaminated sites and water quality personnel and will send me a link to the NATA lab-approval list
9	Japan	Ministry of the Environment	http://www.env.go.jp/en			011-81-3-3581-3351	
10	Canada - Eastern	Environment Canada		Steven Saboe		1-902-426-7231 / 1-902-426-7984	Left Message
11	Canada - Nova Scotia	Nova Scotia Environment	http://www.gov.ns.ca/nse	Andre Goteau		1-902-426-1855	Return phone call message
12	Canada - New Brunswick	New Brunswick Dept of Environment	http://www.gnb.ca	Remediation Section - Drinking Water - Tony Whalen	tony.whalen@gnb.ca	1-506-453-7945	Left Message
13	Canada - Alberta	Alberta Environment - Lethbridge Office		Geoff Nash		403-382-4258	Passed on WorleyParsons contact information
14	Canada - Newfoundland	Dept of Environment and Conservation	http://env.gov.nl.ca/env	Derrick Mattox		1-709-729-5782	Left Message
15	Australia - Queensland	Dept of Environment and Resource Management	http://www.derm.qld.gov.au/topics/index.html	Paul Ritchie	paul.ritchie@derm.qld.gov.au	011-61-1300-130-372	Two refineries in Brisbane - both at coast - one pre-WWII and one post-WWII. No knowledge of sulfolane off hand. Will email information.
16	Australia - Western	EPA of Western Australia - Contaminated Sites Program	http://www.epa.wa.gov.au/	Andrew / Dr. Janet McMillan		011-61-8-6467-5600	Never heard of sulfolane, no information. Will discuss with EPA chemist Janet McMillan and get back with information.
17	New Zealand	Northland Regional Council - Environment	http://www.nrc.govt.nz	James Mitchell	jamesm@nrc.gov.nz	011-64-800-002-004	Has not heard of it, but will search and get back with information. Sent follow-up email with information.

* Additional countries were researched for regulations on websites.

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

0.5 acre source area

Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)
Acenaphthene	83-32-9	3.0E+03	n	2.4E+02	n	2.4E+04	n >S					
Acenaphthylene	208-96-8	3.8E+03	n	4.1E+02	n	4.1E+04	n >S					
Acetaldehyde	75-07-0	1.4E+02	n	5.0E+00	n	5.0E+02	n	1.4E+02	n	4.8E+03	n	
Acetate, 2-ethoxyethanol	111-15-9	9.2E+02	n	9.1E-01	n	9.1E+01	n	2.7E+03	n	4.4E+05	n >S	
Acetate, isoamyl	123-92-2	2.9E+03	n	8.7E+00	n	8.7E+02	n	5.6E+03	n	1.4E+05	n >S	
Acetate, isobutyl	110-19-0	2.6E+03	n	3.7E+00	n	3.7E+02	n	7.4E+03	n	1.5E+05	n >S	
Acetate, sec-butyl	105-46-4	3.1E+03	n	4.0E+00	n	4.0E+02	n	1.5E+04	n	2.5E+05	n >S	
Acetic acid*	64-19-7											
Acetone (2-propanone)	67-64-1	9.8E+03	n	4.3E+01	n	4.3E+03	n	1.1E+04	n	4.9E+05	n	
Acetone cyanohydrin	75-86-5	1.9E+02	n	1.4E-01	n	1.4E+01	n	4.3E+03	n	6.6E+05	n	
Acetonitrile	75-05-8	8.7E+02	n	1.5E+00	n	1.5E+02	n	1.3E+03	n	6.2E+04	n	
Acetophenone	98-86-2	2.8E+03	n	8.2E+00	n	8.2E+02	n	4.8E+03	n	4.6E+05	n >S	
Acetylaminofluorene, 2-	53-96-3	1.2E+00	c	4.5E-03	c	4.5E-01	c	1.9E+01	c	1.2E+04	c >S	
Acifluorfen, sodium	62476-59-9	7.6E+02	n	2.0E+00	n	2.0E+02	n	6.5E+03	n	1.0E+06	n >S	
Acridine	260-94-6	2.0E+02	n	7.5E+00	n	7.5E+02	n					
Acrolein	107-02-8	1.1E+00	n	2.4E-02	n	2.4E+00	n	1.1E+00	n	1.4E+02	n	
Acrylamide	79-06-1	7.0E-01	c	3.9E-04	c	3.9E-02	c	2.1E+00	c	5.6E+02	c	
Acrylic acid	79-10-7	1.2E+02	n	2.4E+01	n	2.4E+03	n	1.2E+02	n	3.0E+04	n	
Acrylonitrile	107-13-1	3.6E+00	c	3.3E-03	c	3.3E-01	c	5.3E+00	c	1.1E+02	c	
Adipic acid (hexanedioic acid)	124-04-9	7.5E+02	n	9.4E+01	n	9.4E+03	n	7.5E+02	n	8.0E+05	n >S	
Alachlor	15972-60-8	5.9E+01	c	1.9E-02	m	1.9E+00	m					
Aldicarb	116-06-3	6.7E+01	n	1.8E-02	m	1.8E+00	m					
Aldicarb sulfone	1646-88-4	6.7E+01	n	1.4E-02	m	1.4E+00	m					
Aldrin	309-00-2	5.0E-02	c	1.0E-01	c	1.0E+01	c	8.3E+00	c	8.5E+03	c >S	
Allyl alcohol	107-18-6	1.6E+01	n	2.5E-01	n	2.5E+01	n	1.7E+01	n	1.8E+03	n	
Allyl chloride	107-05-1	1.5E+01	n	1.0E+00	n	1.0E+02	n	1.5E+01	n	3.8E+01	n	
Aluminum	7429-90-5	6.5E+04	n	1.7E+05	n >S	1.0E+06	n >S					1.4E+03
Ametryn	834-12-8	6.0E+02	n	7.2E+00	n	7.2E+02	n					
Amino-2,6-dinitrotoluene, 4-	19406-51-0	9.8E+00	n	6.7E-02	n	6.7E+00	n	8.7E+01	n	4.6E+04	n >S	
Amino-4,6-dinitrotoluene, 2-	35572-78-2	1.0E+01	n	9.9E-02	n	9.9E+00	n	1.1E+02	n	6.8E+04	n >S	
Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	92-67-1	7.7E-01	c	1.1E-02	c	1.1E+00	c					
Aminopyridine, 4-	504-24-5	1.3E+00	n	9.5E-04	n	9.5E-02	n	3.3E+01	n	9.1E+03	n	
Ammonia	7664-41-7	1.5E+03	n					1.5E+03	n	5.7E+03	n	3.1E+00
Ammonium polyphosphate*	6833-79-9											
Ammonium salts*	NA											
Aniline	62-53-3	1.0E+02	n	3.7E-01	c	3.7E+01	c	1.3E+02	n	2.5E+04	n	
Anthracene	120-12-7	1.8E+04	n	6.9E+03	n >S	6.9E+05	n >S					
Anthraquinone, 9,10-	84-65-1	1.3E+03	n	2.4E+01	n >S	2.4E+03	n >S					
Antimony	7440-36-0	1.5E+01	n	5.4E+00	m >S	5.4E+02	m >S					
Aramite	140-57-8	1.1E+02	c		c		c					
Arsenic	7440-38-2	2.4E+01	n	5.0E+00	m >S	5.0E+02	m >S					
Arsine	7784-42-1	7.7E-01	n					7.7E-01	n			
Asbestos	1332-21-4	2.9E+03	c									
Atrazine	1912-24-9	2.1E+01	c	2.5E-02	m	2.5E+00	m	3.4E+03	n	1.0E+06	n >S	
Azinphos-methyl (guthion)	86-50-0	1.0E+02	n	4.4E-01	n	4.4E+01	n >S					
Azobenzene	103-33-3	3.7E+01	c	1.8E+01	c	1.8E+03	c	1.4E+03	c	1.0E+06	c >S	
Barium	7440-39-3	8.0E+03	n	4.4E+02	m >S	4.4E+04	m >S					

30 acre source area

Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)
Acenaphthene	83-32-9	3.0E+03	n	1.2E+02	n	1.2E+04	n >S					
Acenaphthylene	208-96-8	3.8E+03	n	2.0E+02	n	2.0E+04	n >S					
Acetaldehyde	75-07-0	7.3E+01	n	2.5E+00	n	2.5E+02	n	7.4E+01	n	3.1E+02	n	
Acetate, 2-ethoxyethanol	111-15-9	7.0E+02	n	4.5E-01	n	4.5E+01	n	1.4E+03	n	2.9E+04	n	
Acetate, isoamyl	123-92-2	1.9E+03	n	4.4E+00	n	4.4E+02	n	2.9E+03	n	9.4E+03	n >S	
Acetate, isobutyl	110-19-0	1.9E+03	n	1.8E+00	n	1.8E+02	n	3.8E+03	n	9.8E+03	n >S	
Acetate, sec-butyl	105-46-4	2.6E+03	n	2.0E+00	n	2.0E+02	n	7.5E+03	n	1.6E+04	n >S	
Acetic acid*	64-19-7											
Acetone (2-propanone)	67-64-1	5.4E+03	n	2.1E+01	n	2.1E+03	n	5.8E+03	n	3.2E+04	n	
Acetone cyanohydrin	75-86-5	1.8E+02	n	7.1E-02	n	7.1E+00	n	2.2E+03	n	4.3E+04	n	
Acetonitrile	75-05-8	5.3E+02	n	7.6E-01	n	7.6E+01	n	6.7E+02	n	4.0E+03	n	
Acetophenone	98-86-2	1.8E+03	n	4.1E+00	n	4.1E+02	n	2.5E+03	n	3.0E+04	n >S	
Acetylaminofluorene, 2-	53-96-3	1.1E+00	c	2.3E-03	c	2.3E-01	c	9.5E+00	c	9.9E+02	c >S	
Acifluorfen, sodium	62476-59-9	6.9E+02	n	1.0E+00	n	1.0E+02	n	3.4E+03	n	1.0E+06	n >S	
Acridine	260-94-6	2.0E+02	n	3.8E+00	n	3.8E+02	n					
Acrolein	107-02-8	5.7E-01	n	1.2E-02	n	1.2E+00	n	5.8E-01	n	8.8E+00	n	
Acrylamide	79-06-1	5.4E-01	c	2.0E-04	c	2.0E-02	c	1.1E+00	c	3.7E+01	c	
Acrylic acid	79-10-7	6.2E+01	n	1.2E+01	n	1.2E+03	n	6.2E+01	n	1.9E+03	n	
Acrylonitrile	107-13-1	2.2E+00	c	1.7E-03	c	1.7E-01	c	2.7E+00	c	7.4E+00	c	
Adipic acid (hexanedioic acid)	124-04-9	3.9E+02	n	4.7E+01	n	4.7E+03	n	3.9E+02	n	2.9E+05	n >S	
Alachlor	15972-60-8	5.9E+01	c	9.5E-03	m	9.5E-01	m					
Aldicarb	116-06-3	6.7E+01	n	8.9E-03	m	8.9E-01	m					
Aldicarb sulfone	1646-88-4	6.7E+01	n	6.9E-03	m	6.9E-01	m					
Aldrin	309-00-2	5.0E-02	c	5.1E-02	c	5.1E+00	c	4.3E+00	c	5.5E+02	c >S	
Allyl alcohol	107-18-6	8.6E+00	n	1.3E-01	n	1.3E+01	n	8.8E+00	n	1.2E+02	n	
Allyl chloride	107-05-1	7.8E+00	n	5.1E-01	n	5.1E+01	n	7.9E+00	n	2.5E+00	n	
Aluminum	7429-90-5	6.4E+04	n	8.6E+04	n >S	1.0E+06	n >S					7.1E+02
Ametryn	834-12-8	6.0E+02	n	3.6E+00	n	3.6E+02	n					
Amino-2,6-dinitrotoluene, 4-	19406-51-0	8.9E+00	n	3.3E-02	n	3.3E+00	n	4.5E+01	n	3.0E+03	n >S	
Amino-4,6-dinitrotoluene, 2-	35572-78-2	9.3E+00	n	5.0E-02	n	5.0E+00	n	5.6E+01	n	4.4E+03	n >S	
Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	92-67-1	7.7E-01	c	5.4E-03	c	5.4E-01	c					
Aminopyridine, 4-	504-24-5	1.2E+00	n	4.7E-04	n	4.7E-02	n	1.7E+01	n	5.9E+02	n	
Ammonia	7664-41-7	7.9E+02	n					7.9E+02	n	3.7E+02	n	1.6E+00
Ammonium polyphosphate*	6833-79-9											
Ammonium salts*	NA											
Aniline	62-53-3	5.9E+01	n	1.8E-01	c	1.8E+01	c	6.7E+01	n	1.6E+03	n	
Anthracene	120-12-7	1.8E+04	n	3.4E+03	n >S	3.4E+05	n >S					
Anthraquinone, 9,10-	84-65-1	1.3E+03	n	1.2E+01	n >S	1.2E+03	n >S					
Antimony	7440-36-0	1.5E+01	n	2.7E+00	m >S	2.7E+02	m >S					
Aramite	140-57-8	1.1E+02	c		c		c					
Arsenic	7440-38-2	2.4E+01	n	2.5E+00	m >S	2.5E+02	m >S					
Arsine	7784-42-1	3.9E-01	n					3.9E-01	n			
Asbestos	1332-21-4	1.5E+03	c									
Atrazine	1912-24-9	2.1E+01	c	1.2E-02	m	1.2E+00	m	1.7E+03	n	9.8E+04	n >S	
Azinphos-methyl (guthion)	86-50-0	1.0E+02	n	2.2E-01	n	2.2E+01	n >S					
Azobenzene	103-33-3	3.6E+01	c	8.8E+00	c	8.8E+02	c	7.1E+02	c	9.4E+04	c >S	
Barium	7440-39-3	7.8E+03	n	2.2E+02	m >S	2.2E+04	m >S					

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)
Bayleton	43121-43-3	2.0E+03	n	7.4E+00	n	7.4E+02	n >S							2.0E+03	n	3.7E+00	n	3.7E+02	n >S						
Benefin (benfluralin)	1861-40-1	1.9E+04	n	4.9E+04	n >S	1.0E+06	n >S							1.9E+04	n	2.4E+04	n >S	1.0E+06	n >S						
Benomyl	17804-35-2	3.3E+03	n	3.1E+00	n	3.1E+02	n >S							3.3E+03	n	1.5E+00	n	1.5E+02	n >S						
Benz-a-anthracene	56-55-3	5.7E+00	c	1.8E+01	c	1.8E+03	c >S	3.7E+03	c	1.0E+06	c >S			5.6E+00	c	8.9E+00	c	8.9E+02	c >S	1.9E+03	c	1.0E+06	c >S		
Benzaldehyde	100-52-7	4.5E+02	n	1.1E+01	n	1.1E+03	n	4.8E+02	n	2.2E+04	n >S			2.4E+02	n	5.3E+00	n	5.3E+02	n	2.5E+02	n	1.4E+03	n		
Benzene	71-43-2	6.6E+01	c	2.6E-02	m	2.6E+00	m	1.6E+02	c	9.2E+02	c			4.8E+01	c	1.3E-02	m	1.3E+00	m	8.4E+01	c	6.0E+01	c		
Benzenedicarbonitrile, 1,3-	626-17-5	4.0E+02	n	3.3E-01	n	3.3E+01	n							4.0E+02	n	1.6E-01	n	1.6E+01	n						
Benzenedicarboxylic acid, 1,2-disodecyl ester	26761-40-0	3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S			3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S		
Benzenethiol	108-98-5	7.4E-01	n	6.8E-04	n	6.8E-02	n	7.7E+00	n	1.3E+02	n			6.8E-01	n	3.4E-04	n	3.4E-02	n	3.9E+00	n	8.1E+00	n		
Benzidine	92-87-5	1.5E-02	c	1.1E-05	c	1.1E-03	c	6.3E-02	c	1.4E+01	c			1.3E-02	c	5.5E-06	c	5.5E-04	c	3.2E-02	c	1.2E+00	c		
Benzo-a-pyrene	50-32-8	5.6E-01	c	7.6E+00	m	7.6E+02	m >S	8.5E+02	c	1.0E+06	c >S			5.6E-01	c	3.8E+00	m	3.8E+02	m >S	4.4E+02	c	9.6E+05	c >S		
Benzo-b-fluoranthene	205-99-2	5.7E+00	c	6.0E+01	c	6.0E+03	c >S	6.1E+03	c	1.0E+06	c >S			5.7E+00	c	3.0E+01	c	3.0E+03	c >S	3.2E+03	c	1.0E+06	c >S		
Benzo-e-pyrene	192-97-2	1.8E+03	n	1.1E+05	n >S	1.0E+06	n >S							1.8E+03	n	5.7E+04	n >S	1.0E+06	n >S						
Benzo-g,h,i-perylene	191-24-2	1.8E+03	n	4.6E+04	n >S	1.0E+06	n >S							1.8E+03	n	2.3E+04	n >S	1.0E+06	n >S						
Benzoic acid	65-85-0	6.9E+02	n	1.9E+02	n	1.9E+04	n >S	6.9E+02	n	2.0E+05	n >S			3.5E+02	n	9.5E+01	n	9.5E+03	n >S	3.5E+02	n	1.3E+04	n >S		
Benzo-j-fluoranthene	205-82-3	5.4E+00	c	2.6E+01	c	2.6E+03	c >S	3.2E+03	c	1.0E+06	c >S			5.3E+00	c	1.3E+01	c	1.3E+03	c >S	1.7E+03	c	1.0E+06	c >S		
Benzo-k-fluoranthene	207-08-9	5.7E+01	c	6.2E+02	c >S	6.2E+04	c >S	1.5E+05	c	1.0E+06	c >S			5.7E+01	c	3.1E+02	c >S	3.1E+04	c >S	7.8E+04	c	1.0E+06	c >S		
Benzophenone	119-61-9	4.5E+02	n	1.7E+01	n	1.7E+03	n							4.5E+02	n	8.5E+00	n	8.5E+02	n						
Benzotrichloride	98-07-7	3.6E-01	c	4.2E-03	c	4.2E-01	c	6.9E+01	n	5.1E+03	n			3.6E-01	c	2.1E-03	c	2.1E-01	c	3.5E+01	n	3.3E+02	n		
Benzoyl peroxide	94-36-0	2.3E+03	n	5.4E+01	n	5.4E+03	n >S	7.9E+03	n	1.0E+06	n >S			1.8E+03	n	2.7E+01	n	2.7E+03	n >S	4.1E+03	n	4.6E+05	n >S		
Benzyl alcohol	100-51-6	7.1E+03	n	2.9E+01	n	2.9E+03	n	8.9E+03	n	1.0E+06	n >S			4.0E+03	n	1.5E+01	n	1.5E+03	n	4.6E+03	n	1.4E+05	n >S		
Benzyl chloride	100-44-7	2.6E+01	n	5.0E-02	c	5.0E+00	c	3.1E+01	n	9.3E+02	n			1.4E+01	n	2.5E-02	c	2.5E+00	c	1.6E+01	n	6.0E+01	n		
Benzyl dichloride	98-87-3	2.8E+01	c	6.3E-02	c	6.3E+00	c	1.1E+02	n	4.7E+03	n >S			2.8E+01	c	3.2E-02	c	3.2E+00	c	5.7E+01	n	3.0E+02	n		
Beryllium	7440-41-7	3.8E+01	n	1.8E+00	m >S	1.8E+02	m >S							3.8E+01	n	9.2E-01	m >S	9.2E+01	m >S						
Biphenyl, 1,1-	92-52-4	2.5E+02	n	2.5E+02	n	2.5E+04	n >S	2.7E+02	n	4.2E+04	n >S			1.3E+02	n	1.3E+02	n	1.3E+04	n >S	1.4E+02	n	2.7E+03	n >S		
Biphenyl, 1,1'-, 2-phenoxy-	6738-04-1	3.9E+03	n	7.5E+04	n >S	1.0E+06	n >S							3.9E+03	n	3.7E+04	n >S	1.0E+06	n >S						
Biquinoline, 2,2'-	119-91-5	1.8E+02	n	2.7E+01	n	2.7E+03	n >S							1.8E+02	n	1.3E+01	n	1.3E+03	n >S						
Bis (2-chloroethoxy) methane	111-91-1	3.1E+00	c	1.2E-02	c	1.2E+00	c	1.1E+01	c	1.1E+03	c			2.5E+00	c	5.9E-03	c	5.9E-01	c	5.8E+00	c	7.4E+01	c		
Bis (2-chloroethyl) ether	111-44-4	2.2E+00	c	2.1E-03	c	2.1E-01	c	3.6E+00	c	2.4E+02	c			1.4E+00	c	1.1E-03	c	1.1E-01	c	1.8E+00	c	1.5E+01	c		
Bis (2-chloroisopropyl) ether	108-60-1	5.1E+01	c	1.9E-01	c	1.9E+01	c	2.1E+02	c	1.3E+04	c			4.1E+01	c	9.5E-02	c	9.5E+00	c	1.1E+02	c	8.2E+02	c		
Bis (2-chloromethyl) ether	542-88-1	4.8E-03	c	8.2E-06	c	8.2E-04	c	5.8E-03	c	1.7E-01	c			2.7E-03	c	4.1E-06	c	4.1E-04	c	3.0E-03	c	1.1E-02	c		
Bis (2-ethyl-hexyl) phthalate	117-81-7	4.3E+01	c	1.6E+02	m	1.6E+04	m >S							4.3E+01	c	8.2E+01	m	8.2E+03	m >S						
Bismuth	7440-69-9	3.7E+04	n		n		n							3.7E+04	n		n		n						
Bisphenol A	80-05-7	3.2E+03	n	2.9E+01	n	2.9E+03	n	9.6E+04	n	1.0E+06	n >S			3.1E+03	n	1.5E+01	n	1.5E+03	n	4.9E+04	n	1.0E+06	n >S		
Boron[5]	7440-42-8	1.6E+04	n		n		n							1.6E+04	n		n		n						
Bromacil	314-40-9	6.7E+03	n	1.7E+01	n	1.7E+03	n							6.7E+03	n	8.6E+00	n	8.6E+02	n						
Bromo-2-chloroethane, 1-	107-04-0	6.2E+02	n	3.5E+00	n	3.5E+02	n	7.7E+02	n	9.0E+03	n			3.5E+02	n	1.7E+00	n	1.7E+02	n	3.9E+02	n	5.8E+02	n		
Bromobenzene	108-86-1	1.5E+02	n	5.8E+00	n	5.8E+02	n	1.6E+02	n	4.5E+03	n >S			7.9E+01	n	2.9E+00	n	2.9E+02	n	8.3E+01	n	2.9E+02	n		
Bromodichloromethane	75-27-4	9.8E+01	c	6.5E-02	c	6.5E+00	c							9.8E+01	c	3.3E-02	c	3.3E+00	c						
Bromoform	75-25-2	4.0E+02	c	6.3E-01	c	6.3E+01	c	8.4E+02	c	2.8E+04	c >S			2.8E+02	c	3.2E-01	c	3.2E+01	c	4.3E+02	c	1.8E+03	c		
Bromomethane	74-83-9	4.6E+01	n	1.3E-01	n	1.3E+01	n	7.7E+01	n	1.8E+02	n			2.9E+01	n	6.5E-02	n	6.5E+00	n	3.9E+01	n	1.1E+01	n		
Bromophenyl phenylether, 4-	101-55-3	2.8E-01	c	3.5E-01	c	3.5E+01	c	9.8E+00	c	9.2E+03	c >S			2.7E-01	c	1.8E-01	c	1.8E+01	c	5.0E+00	c	5.9E+02	c		
Butadiene, 1,3-	106-99-0	5.1E+02	n					5.1E+02	n	5.0E+02	n			2.6E+02	n					2.6E+02	n	3.2E+01	n		
Butadiene, 2-methyl-1,3- (isoprene)	78-79-5	4.8E+03	n	1.1E+01	n	1.1E+03	n	2.8E+05	n	6.2E+05	n >S			4.7E+03	n	5.5E+00	n	5.5E+02	n	1.4E+05	n	4.0E+04	n >S		
Butanal (butyraldehyde)	123-72-8	3.5E+03	n	3.2E+00	n	3.2E+02	n	1.2E+04	n	3.5E+05	n >S			2.8E+03	n	1.6E+00	n	1.6E+02	n	6.3E+03	n	2.2E+04	n		
Butane, 2,3-dimethyl-	79-29-8	4.8E+03	n	2.8E+02	n	2.8E+04	n >S	2.8E+05	n	4.6E+05	n >S			4.7E+03	n	1.4E+02	n	1.4E+04	n >S	1.4E+05	n	3.0E+04	n >S		
Butanoic acid (butyric acid)	107-92-6	1.3E+02	n	2.3E+01	n	2.3E+03	n	1.3E+02	n	3.6E+04	n			6.6E+01	n	1.2E+01	n	1.2E+03	n	6.6E+01	n	2.4E+03	n		

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area																30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2]	ote	$^{GW}Soil_{Ing}$	note3	$^{GW}Soil_{Class3}$	note3	$AirSoil_{Inh\text{-}V}$[4]	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$	note3	GWSoil fo Secondary MCL		$^{Tot}Soil_{Comb}$[2]	ote	$^{GW}Soil_{Ing}$	note3	$^{GW}Soil_{Class3}$	note3	$AirSoil_{Inh\text{-}V}$[4]	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$	note3	GWSoil fo Secondary MCL	
		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)	
Butanol, 2-	78-92-2	5.2E+03	n	5.2E+00	n	5.2E+02	n	1.4E+04	n	1.0E+06	n	>S		3.8E+03	n	2.6E+00	n	2.6E+02	n	7.2E+03	n	7.2E+04	n		
Butanol, 2-methyl-2-	75-85-4	8.0E+02	n	5.9E-01	n	5.9E+01	n	3.1E+04	n	1.0E+06	n	>S		7.8E+02	n	2.9E-01	n	2.9E+01	n	1.6E+04	n	9.8E+04	n	>S	
Butanol, n-	71-36-3	2.9E+03	n	5.3E+00	n	5.3E+02	n	4.4E+03	n	4.3E+05	n	>S		1.8E+03	n	2.6E+00	n	2.6E+02	n	2.3E+03	n	2.7E+04	n		
Butene, 1-	106-98-9	4.8E+03	n	4.4E+01	n	4.4E+03	n	2.8E+05	n	3.0E+05	n	>S		4.7E+03	n	2.2E+01	n	2.2E+03	n	1.4E+05	n	1.9E+04	n	>S	
Butene, cis-2-	590-18-1	4.8E+03	n	3.2E+01	n	3.2E+03	n	2.8E+05	n	3.2E+05	n	>S		4.7E+03	n	1.6E+01	n	1.6E+03	n	1.4E+05	n	2.0E+04	n	>S	
Butene, trans-2-	624-64-6	4.8E+03	n	3.2E+01	n	3.2E+03	n	2.8E+05	n	3.2E+05	n	>S		4.7E+03	n	1.6E+01	n	1.6E+03	n	1.4E+05	n	2.0E+04	n	>S	
Butoxy ethanol, 2- (Ethylene glycol monobutyl ether; EGBE)	111-76-2	3.3E+04	n	2.9E+01	n	2.9E+03	n	1.0E+06	n	1.0E+06	n	>S		3.2E+04	n	1.5E+01	n	1.5E+03	n	1.0E+06	n	1.0E+06	n	>S	
Butyl acetate	123-86-4	1.1E+03	n	1.0E+01	n	1.0E+03	n	1.2E+03	n	3.1E+04	n	>S		6.1E+02	n	5.1E+00	n	5.1E+02	n	6.4E+02	n	2.0E+03	n		
Butyl acrylate	141-32-2	1.1E+02	n	1.0E+00	n	1.0E+02	n	1.3E+02	n	3.7E+03	n			6.2E+01	n	5.2E-01	n	5.2E+01	n	6.8E+01	n	2.4E+02	n		
Butyl benzyl phthalate	85-68-7	1.6E+03	c	2.6E+02	c	2.6E+04	c	>S	2.5E+04	n	1.0E+06	n	>S		1.6E+03	c	1.3E+02	c	1.3E+04	c	>S	1.3E+04	n	1.0E+06	n	>S	
Butyl ether, n- (dibutyl ether)	142-96-1	1.8E+03	n	4.3E+01	n	4.3E+03	n	2.3E+03	n	8.9E+04	n	>S		1.0E+03	n	2.2E+01	n	2.2E+03	n	1.2E+03	n	5.8E+03	n	>S	
Butyl methacrylate	97-88-1	5.7E+03	n	2.6E+01	n	2.6E+03	n	2.6E+04	n	9.6E+05	n	>S		4.8E+03	n	1.3E+01	n	1.3E+03	n	1.3E+04	n	6.2E+04	n	>S	
Butylate	2008-41-5	3.3E+03	n	8.5E+00	n	8.5E+02	n	>S						3.3E+03	n	4.3E+00	n	4.3E+02	n	>S					
Butylbenzene, n-	104-51-8	1.9E+03	n	1.2E+02	n	1.2E+04	n	>S	6.6E+03	n	4.5E+05	n	>S		1.5E+03	n	6.1E+01	n	6.1E+03	n	>S	3.4E+03	n	2.9E+04	n	>S	
Butylbenzene, sec-	135-98-8	2.1E+03	n	8.5E+01	n	8.5E+03	n	>S	5.7E+03	n	3.4E+05	n	>S		1.6E+03	n	4.2E+01	n	4.2E+03	n	>S	2.9E+03	n	2.2E+04	n	>S	
Butylbenzene, tert-	98-06-6	1.9E+03	n	1.0E+02	n	1.0E+04	n	>S	4.7E+03	n	2.5E+05	n	>S		1.4E+03	n	5.0E+01	n	5.0E+03	n	>S	2.4E+03	n	1.6E+04	n	>S	
Cacodylic acid	75-60-5	2.0E+02	n	1.5E-01	n	1.5E+01	n							2.0E+02	n	7.4E-02	n	7.4E+00	n						
Cadmium	7440-43-9	5.2E+01	n	1.5E+00	m	>S	1.5E+02	m	>S					5.2E+01	n	7.5E-01	m	>S	7.5E+01	m	>S				
Calcium*	7440-70-2																								
Caprolactam	105-60-2	3.2E+02	n	4.7E+01	n	4.7E+03	n	3.3E+02	n	9.3E+04	n			1.7E+02	n	2.3E+01	n	2.3E+03	n	1.7E+02	n	6.1E+03	n		
Captan	133-06-2	1.3E+03	c	6.7E+01	c	6.7E+03	c	>S	1.1E+04	n	1.0E+06	n	>S		1.3E+03	c	3.4E+01	c	3.4E+03	c	>S	5.9E+03	n	9.3E+05	n	>S	
Carbaryl	63-25-2	2.5E+03	n	2.8E+01	n	2.8E+03	n	>S	4.0E+03	n	1.0E+06	n	>S		1.6E+03	n	1.4E+01	n	1.4E+03	n	>S	2.1E+03	n	1.3E+05	n	>S	
Carbazole	86-74-8	2.3E+02	c	4.6E+00	c	4.6E+02	c	>S						2.3E+02	c	2.3E+00	c	2.3E+02	c	>S					
Carbofuran	1563-66-2	3.1E+01	n	1.2E-01	m	1.2E+01	m	3.4E+01	n	1.2E+04	n	>S		1.6E+01	n	6.2E-02	m	6.2E+00	m	1.7E+01	n	7.5E+02	n		
Carbon disulfide	75-15-0	4.6E+03	n	1.4E+01	n	1.4E+03	n	1.1E+04	n	2.7E+04	n	>S		3.3E+03	n	6.8E+00	n	6.8E+02	n	5.5E+03	n	1.7E+03	n		
Carbon tetrachloride	56-23-5	1.6E+01	c	6.2E-02	m	6.2E+00	m	2.4E+01	c	9.8E+01	c			9.7E+00	c	3.1E-02	m	3.1E+00	m	1.2E+01	c	6.3E+00	c		
Carbophenothion	786-19-6	8.2E+02	n	1.5E+03	n	1.5E+05	n	>S						8.2E+02	n	7.4E+02	n	7.4E+04	n	>S					
Carbosulfan	55285-14-8	4.3E+02	n	2.5E+02	n	2.5E+04	n	>S						4.3E+02	n	1.3E+02	n	1.3E+04	n	>S					
Carboxin	5234-68-4	6.7E+03	n	8.7E+01	n	8.7E+03	n	>S						6.7E+03	n	4.4E+01	n	4.4E+03	n	>S					
Chloral	75-87-6	6.9E+02	n	5.3E+00	n	5.3E+02	n	7.5E+02	n	1.8E+05	n			3.7E+02	n	2.7E+00	n	2.7E+02	n	3.8E+02	n	1.2E+04	n		
Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)	302-17-0	7.5E+02	n	5.2E+00	n	5.2E+02	n	8.4E+02	n	2.4E+05	n			4.1E+02	n	2.6E+00	n	2.6E+02	n	4.3E+02	n	1.6E+04	n		
Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)	133-90-4	1.0E+03	n	3.8E+00	n	3.8E+02	n							1.0E+03	n	1.9E+00	n	1.9E+02	n						
Chlordane (technical)	12789-03-6	6.0E+00	c	9.6E+00	m	9.6E+02	m	>S	1.2E+03	c	1.0E+06	c	>S		5.9E+00	c	4.8E+00	m	4.8E+02	m	>S	6.4E+02	c	2.4E+05	c	>S	
Chlordane, cis- (alpha chlordane)	5103-71-9	1.3E+01	c	7.4E+02	c	7.4E+04	c	>S	4.1E+03	c	1.0E+06	c	>S		1.3E+01	c	3.7E+02	c	3.7E+04	c	>S	2.1E+03	c	1.0E+06	c	>S	
Chlordane, gamma	57-74-9	7.4E+00	c	4.1E+01	c	4.1E+03	c	>S	9.7E+02	c	1.0E+06	c	>S		7.3E+00	c	2.1E+01	c	2.1E+03	c	>S	5.0E+02	c	1.6E+05	c	>S	
Chlorfenvinphos	470-90-6	1.4E+01	n	9.1E-01	n	9.1E+01	n	3.1E+01	n					9.6E+00	n	4.6E-01	n	4.6E+01	n	1.6E+01	n				
Chloride*	16887-00-6																								
Chlorine	7782-50-5	2.3E+01	n		m		m	2.3E+01	n		n	<GW Ing		1.2E+01	n		m		m	1.2E+01	n		n	<GW Ing	
Chloro-1,3-butadiene, 2-	126-99-8	1.1E+02	n					1.1E+02	n	2.4E+02	n			5.5E+01	n					5.5E+01	n	1.5E+01	n		
Chloro-2-propanol, 1-	127-00-4	1.6E+03	n	1.1E+00	n	1.1E+02	n							1.6E+03	n	5.3E-01	n	5.3E+01	n						
Chloro-3-methylphenol, 4-	59-50-7	3.3E+02	n	4.5E+00	n	4.5E+02	n	3.4E+04	n	1.0E+06	n	>S		3.3E+02	n	2.3E+00	n	2.3E+02	n	1.8E+04	n	1.0E+06	n	>S	
Chloroaniline, p-	106-47-8	2.3E+01	c	2.1E-02	c	2.1E+00	c	1.4E+03	n	3.1E+05	n	>S		2.3E+01	c	1.0E-02	c	1.0E+00	c	7.4E+02	n	2.0E+04	n	>S	
Chlorobenzene	108-90-7	5.2E+02	n	1.1E+00	m	1.1E+02	m	7.7E+02	n	1.3E+04	n	>S		3.2E+02	n	5.5E-01	m	5.5E+01	m	3.9E+02	n	8.2E+02	n		
Chlorobenzilate	510-15-6	1.7E+01	c	1.1E-01	c	1.1E+01	c	3.5E+02	c	2.4E+05	c	>S		1.6E+01	c	5.7E-02	c	5.7E+00	c	1.8E+02	c	1.5E+04	c	>S	
Chlorobromomethane (bromochloromethane)	74-97-5	6.2E+02	n	3.0E+00	n	3.0E+02	n	7.7E+02	n	7.0E+03	n			3.5E+02	n	1.5E+00	n	1.5E+02	n	3.9E+02	n	4.5E+02	n		
Chlorodifluoromethane	75-45-6	7.7E+05	n					7.7E+05	n	8.9E+05	n	>S		3.9E+05	n					3.9E+05	n	5.8E+04	n	>S	
Chloroethane (ethyl chloride)	75-00-3	2.7E+04	n	3.1E+01	n	3.1E+03	n	1.5E+05	n	3.7E+05	n	>S		2.3E+04	n	1.5E+01	n	1.5E+03	n	7.9E+04	n	2.4E+04	n		

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area										
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	note	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	note	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)
Chloroethanol, 2-	107-07-3	3.4E+02	n	1.9E+01	n	1.9E+03	n	3.4E+02	n	7.1E+04	n			1.8E+02	n	9.7E+00	n	9.7E+02	n	1.8E+02	n	4.6E+03	n	
Chloroethoxy ethene, 2- (2-chloroethylvinylether)	110-75-8	4.5E+00	n	2.9E-03	c	2.9E-01	c	4.6E+00	n	6.8E+01	n			2.3E+00	n	1.4E-03	c	1.4E-01	c	2.4E+00	n	4.4E+00	n	
Chloroform	67-66-3	1.6E+01	c	1.0E+00	n	1.0E+02	n	1.6E+01	c	8.3E+01	c			8.0E+00	c	5.1E-01	n	5.1E+01	n	8.0E+00	c	5.4E+00	c	
Chlorohexane, 1-	544-10-5	2.7E+03	n	3.9E+01	n	3.9E+03	n >S	1.5E+04	n	2.9E+05	n >S			2.3E+03	n	2.0E+01	n	2.0E+03	n >S	7.9E+03	n	1.9E+04	n >S	
Chloromethane (methyl chloride)	74-87-3	1.4E+02	c	4.1E-01	c	4.1E+01	c	2.0E+02	c	2.1E+02	c			8.4E+01	c	2.0E-01	c	2.0E+01	c	1.0E+02	c	1.4E+01	c	
Chloronaphthalene, 1- (Chloronaphthalene, alpha-)	90-13-1	4.6E+03	n	7.4E+02	n	7.4E+04	n >S							4.6E+03	n	3.7E+02	n	3.7E+04	n >S					
Chloronaphthalene, 2- (chloronaphthalene, beta)	91-58-7	5.0E+03	n	6.7E+02	n	6.7E+04	n >S							5.0E+03	n	3.3E+02	n	3.3E+04	n >S					
Chloronitrobenzene, p- (1-chloro-4-nitrobenzene)	100-00-5	3.2E+01	n	1.5E-01	n	1.5E+01	n	6.3E+01	n	4.8E+03	n >S			2.2E+01	n	7.6E-02	n	7.6E+00	n	3.2E+01	n	3.1E+02	n	
Chlorophenol, 2-	95-57-8	3.8E+02	n	1.6E+00	n	1.6E+02	n	6.3E+03	n	8.2E+05	n >S			3.6E+02	n	8.2E-01	n	8.2E+01	n	3.2E+03	n	5.3E+04	n	
Chlorophenol, 3-	108-43-0	3.2E+02	n	7.8E-01	n	7.8E+01	n	1.3E+04	n	1.0E+06	n >S			3.2E+02	n	3.9E-01	n	3.9E+01	n	6.5E+03	n	2.4E+05	n >S	
Chlorophenol, 4-	106-48-9	3.2E+02	n	8.4E-01	n	8.4E+01	n	1.3E+04	n	1.0E+06	n >S			3.2E+02	n	4.2E-01	n	4.2E+01	n	6.8E+03	n	2.6E+05	n >S	
Chlorophenyl phenylether, 4-	7005-72-3	1.6E-01	c	3.2E-02	c	3.2E+00	c	2.5E+00	c	6.5E+02	c			1.5E-01	c	1.6E-02	c	1.6E+00	c	1.3E+00	c	4.2E+01	c	
Chloropropane, 2-	75-29-6	9.4E+02	n	5.4E+00	n	5.4E+02	n	1.5E+03	n	3.5E+03	n			6.0E+02	n	2.7E+00	n	2.7E+02	n	7.9E+02	n	2.2E+02	n	
Chlorothalonil	1897-45-6	4.3E+02	c	8.1E+00	c	8.1E+02	c							4.3E+02	c	4.1E+00	c	4.1E+02	c					
Chlorotoluene, o- (2-chlorotoluene)	95-49-8	1.0E+03	n	9.1E+00	n	9.1E+02	n	4.3E+03	n	1.4E+05	n >S			8.3E+02	n	4.5E+00	n	4.5E+02	n	2.2E+03	n	9.2E+03	n >S	
Chlorotoluene, p- (4-chlorotoluene)	106-43-4	4.8E+00	n	3.8E+01	n	3.8E+03	n >S	4.8E+00	n	1.7E+02	n			2.5E+00	n	1.9E+01	n	1.9E+03	n >S	2.5E+00	n	1.1E+01	n	<GW Ing
Chlorpyrifos	2921-88-2	9.3E+01	n	1.5E+01	n	1.5E+03	n >S	3.4E+02	n	3.2E+05	n >S			7.4E+01	n	7.4E+00	n	7.4E+02	n >S	1.8E+02	n	2.1E+04	n >S	
Chromium (III)	16065-83-1	3.0E+04	n	2.4E+03	m >S	2.4E+05	m >S							2.3E+04	n	1.2E+03	m >S	1.2E+05	m >S					
Chromium (total)	7440-47-3	3.0E+04	n	2.4E+03	m >S	2.4E+05	m >S							2.3E+04	n	1.2E+03	m >S	1.2E+05	m >S					
Chromium (VI)	18540-29-9	1.2E+02	n	2.8E+01	m >S	2.8E+03	m >S							1.2E+02	n	1.4E+01	m >S	1.4E+03	m >S					
Chrysene	218-01-9	5.6E+02	c	1.5E+03	c >S	1.5E+05	c >S	5.9E+05	c	1.0E+06	c >S			5.6E+02	c	7.7E+02	c >S	7.7E+04	c >S	3.0E+05	c	1.0E+06	c >S	
Cobalt	7440-48-4	2.1E+01	n	6.6E+00	n >S	6.6E+02	n >S							2.1E+01	n	3.3E+00	n >S	3.3E+02	n >S					
Copolymer acrylamide	69418-26-4	2.8E+00	n	9.4E-03	n	9.4E-01	n	3.6E+00	n	9.3E+02	n			1.6E+00	n	4.7E-03	n	4.7E-01	n	1.8E+00	n	6.2E+01	n	
Copper	7440-50-8	5.5E+02	n	1.0E+03	a >S	1.0E+05	a >S					8.0E+02		5.5E+02	n	5.2E+02	a >S	5.2E+04	a >S					4.0E+02
Coronene	191-07-1	1.3E+02	n	5.6E+04	n >S	1.0E+06	n >S							1.3E+02	n	2.8E+04	n >S	1.0E+06	n >S					
Coumaphos	56-72-4	4.3E+02	n	1.1E+02	n	1.1E+04	n >S							4.3E+02	n	5.5E+01	n	5.5E+03	n >S					
Cresol	1319-77-3	1.6E+03	n	6.6E+00	n	6.6E+02	n	3.0E+03	n	6.7E+05	n >S			1.1E+03	n	3.3E+00	n	3.3E+02	n	1.5E+03	n	4.3E+04	n	
Cresol, m- (3-methylphenol)	108-39-4	1.6E+03	n	6.6E+00	n	6.6E+02	n	3.0E+03	n	6.7E+05	n >S			1.1E+03	n	3.3E+00	n	3.3E+02	n	1.5E+03	n	4.3E+04	n	
Cresol, o- (2-methylphenol)	95-48-7	1.5E+03	n	7.1E+00	n	7.1E+02	n	2.8E+03	n	5.8E+05	n >S			1.0E+03	n	3.6E+00	n	3.6E+02	n	1.5E+03	n	3.8E+04	n	
Cresol, p- (4-methylphenol)	106-44-5	3.0E+02	n	6.3E-01	n	6.3E+01	n	2.8E+03	n	6.1E+05	n >S			2.7E+02	n	3.2E-01	n	3.2E+01	n	1.5E+03	n	4.0E+04	n	
Crotonaldehyde	123-73-9	3.2E+00	c	9.5E-04	c	9.5E-02	c	1.9E+02	n	1.3E+04	n			3.2E+00	c	4.8E-04	c	4.8E-02	c	9.9E+01	n	8.1E+02	n	
Cumene (isopropylbenzene)	98-82-8	4.3E+03	n	3.5E+02	n	3.5E+04	n >S	9.2E+03	n	6.2E+05	n >S			3.0E+03	n	1.7E+02	n	1.7E+04	n >S	4.8E+03	n	4.0E+04	n >S	
Cyanazine	21725-46-2	5.6E+00	c	4.2E-03	c	4.2E-01	c							5.6E+00	c	2.1E-03	c	2.1E-01	c					
Cyanide	57-12-5	1.6E+03	n	4.0E+01	m	4.0E+03	m							1.6E+03	n	2.0E+01	m	2.0E+03	m					
Cyanogen	460-19-5	2.9E+02	n	2.4E+00	n	2.4E+02	n	3.2E+02	n	4.8E+02	n			1.6E+02	n	1.2E+00	n	1.2E+02	n	1.7E+02	n	3.1E+01	n	
Cycloate	1134-23-2	3.7E+03	n	1.5E+02	n	1.5E+04	n >S							3.7E+03	n	7.6E+01	n	7.6E+03	n >S					
Cyclohexane	110-82-7	7.5E+04	n	5.9E+03	n >S	5.9E+05	n >S	9.2E+04	n	2.9E+05	n >S			4.2E+04	n	2.9E+03	n >S	2.9E+05	n >S	4.7E+04	n	1.8E+04	n >S	
Cyclohexanol	108-93-0	2.9E+04	n	2.9E+02	n >S	2.9E+04	n >S	3.1E+04	n	1.0E+06	n >S			1.5E+04	n	1.5E+02	n >S	1.5E+04	n >S	1.6E+04	n	4.3E+05	n >S	
Cyclohexanone	108-94-1	4.9E+03	n	2.6E+02	n	2.6E+04	n	5.0E+03	n	4.3E+05	n >S			2.6E+03	n	1.3E+02	n	1.3E+04	n	2.6E+03	n	2.8E+04	n >S	
Cyclohexene-1-methanol, 3-	1679-51-2	1.6E+03	n	3.8E+00	n	3.8E+02	n							1.6E+03	n	1.9E+00	n	1.9E+02	n					
Cyclopentane, methyl-	96-37-7	5.3E+03	n	1.4E+02	n	1.4E+04	n >S	1.5E+04	n	3.8E+04	n >S			4.0E+03	n	6.8E+01	n	6.8E+03	n >S	7.9E+03	n	2.5E+03	n >S	
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	3.5E+02	n	2.3E+00	n	2.3E+02	n	4.5E+02	n	1.0E+06	n >S			2.0E+02	n	1.2E+00	n	1.2E+02	n	2.3E+02	n	1.0E+06	n >S	
Cyclotrimethylenetrinitramine (RDX)	121-82-4	4.3E+01	c	3.7E-02	c	3.7E+00	c	5.6E+01	n	5.2E+03	n >S			2.5E+01	n	1.8E-02	c	1.8E+00	c	2.9E+01	n	3.4E+02	n >S	
Cymene (isopropyltoluene)	99-87-6	3.7E+03	n	2.3E+02	n	2.3E+04	n >S	6.9E+03	n	4.3E+05	n >S			2.5E+03	n	1.2E+02	n	1.2E+04	n >S	3.5E+03	n	2.8E+04	n >S	
Cymoxanil	57966-95-7	8.7E+02	n	6.1E-01	n	6.1E+01	n							8.7E+02	n	3.0E-01	n	3.0E+01	n					
Dacthal (DCPA)	1861-32-1	6.2E+02	n	4.5E+02	n >S	4.5E+04	n >S							6.2E+02	n	2.3E+02	n >S	2.3E+04	n >S					
Dalapon, sodium salt (2,2-dichloropropanoic acid)	75-99-0	2.0E+03	n	5.8E-01	m	5.8E+01	m							2.0E+03	n	2.9E-01	m	2.9E+01	m					

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$Air Soil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)
DDD	72-54-8	1.4E+01	c	1.3E+01	c	1.3E+03	c >S							1.4E+01	c	6.5E+00	c	6.5E+02	c >S						
DDE	72-55-9	1.0E+01	c	1.2E+01	c	1.2E+03	c >S							1.0E+01	c	5.9E+00	c	5.9E+02	c >S						
DDT	50-29-3	5.4E+00	c	1.5E+01	c	1.5E+03	c >S	1.2E+03	c	1.0E+06	c >S			5.4E+00	c	7.4E+00	c	7.4E+02	c >S	6.2E+02	c	2.2E+05	c >S		
Demeton	8065-48-3	2.7E+00	n	1.2E-02	n	1.2E+00	n							2.7E+00	n	6.2E-03	n	6.2E-01	n						
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	2.7E+03	n	1.9E+00	n	1.9E+02	n							2.7E+03	n	9.7E-01	n	9.7E+01	n						
Diallate	2303-16-4	3.8E+01	c	1.2E+00	c	1.2E+02	c							3.8E+01	c	5.8E-01	c	5.8E+01	c						
Diazinon	333-41-5	3.1E+01	n	1.6E-01	n	1.6E+01	n	6.5E+01	n	2.9E+04	n >S			2.1E+01	n	7.9E-02	n	7.9E+00	n	3.3E+01	n	1.9E+03	n >S		
Dibenz(a,h)acridine	226-36-8	3.7E+00	c	5.8E+01	c >S	5.8E+03	c >S	1.5E+04	c	1.0E+06	c >S			3.7E+00	c	2.9E+01	c >S	2.9E+03	c >S	7.9E+03	c	1.0E+06	c >S		
Dibenz(a,j)acridine	224-42-0	5.8E+00	c	1.1E+02	c >S	1.1E+04	c >S	2.1E+04	c	1.0E+06	c >S			5.8E+00	c	5.6E+01	c >S	5.6E+03	c >S	1.1E+04	c	1.0E+06	c >S		
Dibenz-a,h-anthracene	53-70-3	5.5E-01	c	1.5E+01	c	1.5E+03	c >S	2.0E+03	c	1.0E+06	c >S			5.5E-01	c	7.6E+00	c	7.6E+02	c >S	1.0E+03	c	1.0E+06	c >S		
Dibenzo(a,e)pyrene	192-65-4	6.1E-01	c	1.3E+02	c >S	1.3E+04	c >S	7.2E+03	c	1.0E+06	c >S			6.1E-01	c	6.5E+01	c >S	6.5E+03	c >S	3.7E+03	c	1.0E+06	c >S		
Dibenzo(a,h)pyrene	189-64-0	6.1E-02	c	1.2E+01	c	1.2E+03	c >S	7.0E+02	c	1.0E+06	c >S			6.1E-02	c	6.0E+00	c	6.0E+02	c >S	3.6E+02	c	1.0E+06	c >S		
Dibenzo(a,i)pyrene	189-55-9	6.1E-02	c	1.2E+01	c	1.2E+03	c >S	7.0E+02	c	1.0E+06	c >S			6.1E-02	c	6.0E+00	c	6.0E+02	c >S	3.6E+02	c	1.0E+06	c >S		
Dibenzofuran	132-64-9	2.7E+02	n	3.3E+01	n	3.3E+03	n >S							2.7E+02	n	1.7E+01	n	1.7E+03	n >S						
Dibenzothiophene	132-65-0	1.9E+02	n	1.0E+02	n	1.0E+04	n >S							1.9E+02	n	5.0E+01	n	5.0E+03	n >S						
Dibromo-3-chloropropane, 1,2-	96-12-8	1.5E-01	c	1.7E-03	m	1.7E-01	m	1.6E-01	c	5.4E+00	c			8.0E-02	c	8.7E-04	m	8.7E-02	m	8.1E-02	c	3.5E-01	c		
Dibromochloromethane (chlorodibromomethane)	124-48-1	7.2E+01	c	4.9E-02	c	4.9E+00	c							7.2E+01	c	2.5E-02	c	2.5E+00	c						
Dibromofluoromethane	1868-53-7	1.3E+04	n	1.6E+01	n	1.6E+03	n	7.7E+04	n	4.2E+05	n >S			1.2E+04	n	7.8E+00	n	7.8E+02	n	3.9E+04	n	2.7E+04	n >S		
Dicamba	1918-00-9	9.4E+02	n	1.5E+00	n	1.5E+02	n	1.8E+03	n	6.1E+05	n >S			6.3E+02	n	7.3E-01	n	7.3E+01	n	9.1E+02	n	3.9E+04	n >S		
Dichlormid	37764-25-3	1.7E+03	n	2.6E+00	n	2.6E+02	n							1.7E+03	n	1.3E+00	n	1.3E+02	n						
Dichloro-2-butene, 1,4-	764-41-0	2.0E-01	c					2.0E-01	c	6.2E+00	c			1.0E-01	c					1.0E-01	c	4.0E-01	c		
Dichloro-2-butene, 1,4- trans	110-57-6	2.0E-01	c					2.0E-01	c	6.6E+00	c			1.1E-01	c					1.1E-01	c	4.3E-01	c		
Dichlorobenzene, 1,2-	95-50-1	7.2E+02	n	1.8E+01	m	1.8E+03	m	8.0E+02	n	3.5E+04	n >S			3.9E+02	n	8.9E+00	m	8.9E+02	m	4.1E+02	n	2.2E+03	n		
Dichlorobenzene, 1,3-	541-73-1	1.2E+02	n	6.7E+00	n	6.7E+02	n	1.2E+02	n	1.7E+03	n >S			6.2E+01	n	3.4E+00	n	3.4E+02	n	6.3E+01	n	1.1E+02	n		
Dichlorobenzene, 1,4-	106-46-7	2.5E+02	c	2.1E+00	m	2.1E+02	m	2.4E+03	n	1.0E+05	n >S			2.5E+02	c	1.1E+00	m	1.1E+02	m	1.3E+03	n	6.5E+03	n >S		
Dichlorobenzidine, 3,3-	91-94-1	1.0E+01	c	6.3E-02	c	6.3E+00	c							1.0E+01	c	3.1E-02	c	3.1E+00	c						
Dichlorobutane, 2,3-	7581-97-7	9.5E+01	n	2.6E+00	n	2.6E+02	n	1.1E+02	n	1.5E+03	n			5.2E+01	n	1.3E+00	n	1.3E+02	n	5.5E+01	n	9.9E+01	n		
Dichlorodifluoromethane	75-71-8	1.3E+04	n	2.4E+02	n	2.4E+04	n >S	7.6E+04	n	1.5E+05	n >S			1.2E+04	n	1.2E+02	n	1.2E+04	n >S	3.9E+04	n	9.4E+03	n >S		
Dichloroethane, 1,1-	75-34-3	4.5E+03	n	1.8E+01	n	1.8E+03	n	6.1E+03	n	2.7E+04	n >S			2.6E+03	n	9.2E+00	n	9.2E+02	n	3.2E+03	n	1.8E+03	n		
Dichloroethane, 1,2-	107-06-2	1.1E+01	c	1.4E-02	m	1.4E+00	m	1.4E+01	c	9.1E+01	c			6.4E+00	c	6.9E-03	m	6.9E-01	m	7.1E+00	c	5.9E+00	c		
Dichloroethylene, 1,1-	75-35-4	2.3E+03	n	5.0E-02	m	5.0E+00	m	5.2E+03	n	1.2E+04	n			1.6E+03	n	2.5E-02	m	2.5E+00	m	2.7E+03	n	7.7E+02	n		
Dichloroethylene, cis-1,2-	156-59-2	7.7E+02	n	2.5E-01	m	2.5E+01	m	1.2E+04	n	5.8E+04	n >S			7.2E+02	n	1.2E-01	m	1.2E+01	m	6.3E+03	n	3.7E+03	n		
Dichloroethylene, trans-1,2	156-60-5	5.9E+02	n	4.9E-01	m	4.9E+01	m	9.2E+02	n	3.8E+03	n			3.7E+02	n	2.5E-01	m	2.5E+01	m	4.7E+02	n	2.4E+02	n		
Dichlorofluoromethane	75-43-4	6.2E+02	n	1.4E+01	n	1.4E+03	n	6.4E+02	n	2.1E+03	n			3.3E+02	n	7.1E+00	n	7.1E+02	n	3.3E+02	n	1.3E+02	n		
Dichlorophenol, 2,3-	576-24-9	2.0E+02	n	5.4E-01	n	5.4E+01	n	2.5E+04	n	1.0E+06	n >S			2.0E+02	n	2.7E-01	n	2.7E+01	n	1.3E+04	n	5.3E+05	n >S		
Dichlorophenol, 2,4-	120-83-2	2.0E+02	n	3.5E-01	n	3.5E+01	n	1.3E+04	n	1.0E+06	n >S			1.9E+02	n	1.8E-01	n	1.8E+01	n	6.8E+03	n	1.7E+05	n >S		
Dichlorophenol, 2,5-	583-78-8	2.0E+02	n	5.0E-01	n	5.0E+01	n	2.4E+04	n	1.0E+06	n >S			2.0E+02	n	2.5E-01	n	2.5E+01	n	1.2E+04	n	5.0E+05	n >S		
Dichlorophenol, 2,6-	87-65-0	6.5E+01	n	6.9E-02	n	6.9E+00	n	4.1E+03	n	1.0E+06	n >S			6.5E+01	n	3.4E-02	n	3.4E+00	n	2.1E+03	n	6.6E+04	n >S		
Dichlorophenol, 3,4-	95-77-2	2.0E+02	n	2.0E+00	n	2.0E+02	n	5.6E+04	n	1.0E+06	n >S			2.0E+02	n	1.0E+00	n	1.0E+02	n	2.9E+04	n	1.0E+06	n >S		
Dichlorophenol, 3,5-	591-35-5	2.0E+02	n	1.3E+00	n	1.3E+02	n	4.5E+04	n	1.0E+06	n >S			2.0E+02	n	6.6E-01	n	6.6E+01	n	2.3E+04	n	1.0E+06	n >S		
Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)	94-82-6	5.3E+02	n	3.9E-01	n	3.9E+01	n							5.3E+02	n	1.9E-01	n	1.9E+01	n						
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	94-75-7	4.9E+02	n	2.6E+00	m	2.6E+02	m	1.4E+03	n	1.0E+06	n >S			3.7E+02	n	1.3E+00	m	1.3E+02	m	7.4E+02	n	8.0E+04	n >S		
Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)	120-36-5	6.7E+02	n	4.7E-01	n	4.7E+01	n							6.7E+02	n	2.3E-01	n	2.3E+01	n						
Dichloropropane, 1,2-	78-87-5	6.1E+01	n	2.3E-02	m	2.3E+00	m	6.1E+01	n	5.3E+02	n			3.1E+01	n	1.1E-02	m	1.1E+00	m	3.2E+01	n	3.4E+01	n		
Dichloropropane, 1,3-	142-28-9	3.6E+01	c	6.4E-02	c	6.4E+00	c	9.0E+01	c	1.8E+03	c			2.6E+01	c	3.2E-02	c	3.2E+00	c	4.6E+01	c	1.2E+02	c		
Dichloropropane, 2,2-	594-20-7	6.1E+01	n	1.2E-01	c	1.2E+01	c	6.1E+01	n	5.1E+02	n			3.1E+01	n	6.0E-02	c	6.0E+00	c	3.2E+01	n	3.3E+01	n		
Dichloropropanol, 2,3-	616-23-9	2.0E+02	n	2.4E-01	n	2.4E+01	n							2.0E+02	n	1.2E-01	n	1.2E+01	n						

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

Chemical of Concern	CAS	0.5 acre source area											30 acre source area										
		$^{Tot}Soil_{Comb}$ [2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$^{Air}Soil_{Inh-V}$ [4] (mg/kg)	note	$^{Air}GW-Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$ [2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$^{Air}Soil_{Inh-V}$ [4] (mg/kg)	note	$^{Air}GW-Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)
Dichloropropene, 1,1-	563-58-6	3.6E+01	c	1.3E-01	c	1.3E+01	c	9.0E+01	c	2.8E+02	c		2.6E+01	c	6.7E-02	c	6.7E+00	c	4.6E+01	c	1.8E+01	c	
Dichloropropene, 1,3- (mixed isomers)	542-75-6	3.6E+01	c	3.9E-02	c	3.9E+00	c	9.0E+01	c	7.7E+02	c		2.6E+01	c	2.0E-02	c	2.0E+00	c	4.6E+01	c	5.0E+01	c	
Dichloropropene, cis 1,3-	10061-01-5	7.6E+00	n	6.6E-03	c	6.6E-01	c	1.0E+02	n	9.1E+02	n		7.1E+00	n	3.3E-03	c	3.3E-01	c	5.3E+01	n	5.9E+01	n	
Dichloropropene, trans 1,3-	10061-02-6	3.6E+01	c	3.6E-02	c	3.6E+00	c	9.0E+01	c	7.5E+02	c		2.6E+01	c	1.8E-02	c	1.8E+00	c	4.6E+01	c	4.8E+01	c	
Dichlorvos	62-73-7	1.6E+01	c	4.9E+05	c	1.0E+06	c	1.0E+06	n	1.0E+06	n		1.6E+01	c	2.4E+05	c	1.0E+06	c	6.2E+05	n	1.0E+06	n	
Dicrotophos (bidrin)	141-66-2	6.7E+00	n	4.7E-03	n	4.7E-01	n						6.7E+00	n	2.3E-03	n	2.3E-01	n					
Dicyclopentadiene	77-73-6	6.6E+02	n		n		n						6.6E+02	n		n		n					
Dieldrin	60-57-1	1.5E-01	c	4.9E-02	c	4.9E+00	c	3.2E+01	c	1.1E+05	c >S		1.5E-01	c	2.4E-02	c	2.4E+00	c	1.6E+01	c	7.0E+03	c >S	
Diethanolamine	111-42-2	3.0E+01	n	2.3E-02	n	2.3E+00	n	2.8E+02	n	3.0E+05	n		2.7E+01	n	1.2E-02	n	1.2E+00	n	1.4E+02	n	1.1E+05	n	
Diethyl phthalate	84-66-2	2.7E+03	n	1.6E+02	n	1.6E+04	n >S	2.8E+03	n	1.0E+06	n >S		1.4E+03	n	7.8E+01	n	7.8E+03	n >S	1.5E+03	n	7.0E+04	n >S	
Diethylene glycol	111-46-6	1.3E+05	n	9.4E+01	n	9.4E+03	n						1.3E+05	n	4.7E+01	n	4.7E+03	n					
Diethylene glycol monobutyl ether	112-34-5	5.7E+02	n	5.2E-01	n	5.2E+01	n	4.1E+03	n	1.0E+06	n >S		5.0E+02	n	2.6E-01	n	2.6E+01	n	2.1E+03	n	8.9E+04	n >S	
Diethylhexyl adipate	103-23-1	3.9E+03	c	6.1E+03	m >S	6.1E+05	m >S	3.2E+04	n	1.0E+06	n >S		3.9E+03	c	3.0E+03	m >S	3.0E+05	m >S	1.6E+04	n	1.0E+06	n >S	
Diethylstilbestrol	56-53-1	7.1E-04	c	5.8E-04	c	5.8E-02	c						7.1E-04	c	2.9E-04	c	2.9E-02	c					
Diisobutylene (trimethyl-1-pentene, 2,4,4-)	107-39-1	1.9E+03	n	6.1E+02	n	6.1E+04	n >S	3.1E+03	n	9.5E+03	n >S		1.2E+03	n	3.0E+02	n	3.0E+04	n >S	1.6E+03	n	6.1E+02	n	
Diisopropylbenzene, p-	100-18-5	7.0E+02	n	9.5E+01	n	9.5E+03	n >S	4.6E+03	n	5.0E+05	n >S		6.1E+02	n	4.7E+01	n	4.7E+03	n >S	2.4E+03	n	3.3E+04	n >S	
Diisopropyl ether (2,2'-oxybis-propane)	108-20-3	3.5E+03	n	1.2E+01	n	1.2E+03	n	6.1E+03	n	5.5E+04	n >S		2.3E+03	n	6.0E+00	n	6.0E+02	n	3.2E+03	n	3.6E+03	n	
Dimethenamid	87674-68-8	1.0E+03	n	1.0E+00	n	1.0E+02	n						1.0E+03	n	5.2E-01	n	5.2E+01	n					
Dimethoate	60-51-5	1.3E+01	n	1.0E-02	n	1.0E+00	n						1.3E+01	n	5.1E-03	n	5.1E-01	n					
Dimethoxybenzidine, 3,3'-	119-90-4	3.4E+02	c	2.8E-01	c	2.8E+01	c						3.4E+02	c	1.4E-01	c	1.4E+01	c					
Dimethylphenethylamine, alpha, alpha-	122-09-8	1.3E+02	n	3.8E-01	n	3.8E+01	n	2.0E+05	n	1.0E+06	n >S		1.3E+02	n	1.9E-01	n	1.9E+01	n	1.0E+05	n	1.0E+06	n >S	
Dimethyl phenol, 2,4-	105-67-9	1.1E+03	n	3.2E+00	n	3.2E+02	n	5.0E+03	n	1.0E+06	n >S		8.8E+02	n	1.6E+00	n	1.6E+02	n	2.6E+03	n	7.0E+04	n >S	
Dimethylaminoazobenzene, p-	60-11-7	6.4E-01	n	1.1E+00	n	1.1E+02	n						6.4E-01	n	5.6E-01	n	5.6E+01	n					
Dimethylbenz-a-anthracene, 7,12-	57-97-6	1.7E-02	c	1.2E+00	c	1.2E+02	c	1.4E+02	c	1.0E+06	c >S		1.7E-02	c	6.2E-01	c	6.2E+01	c	7.3E+01	c	7.3E+05	c >S	
Dimethylbenzidine, 3,3'-	119-93-7	4.3E-01	c	8.2E-04	c	8.2E-02	c						4.3E-01	c	4.1E-04	c	4.1E-02	c					
Dimethylnaphthalene, 1,3-	575-41-7	2.3E+03	n	7.9E+02	n	7.9E+04	n >S						2.3E+03	n	3.9E+02	n	3.9E+04	n >S					
Dimethylphthalate	131-11-3	1.3E+03	n	6.2E+01	n	6.2E+03	n	1.3E+03	n	3.4E+05	n >S		6.6E+02	n	3.1E+01	n	3.1E+03	n	6.7E+02	n	2.2E+04	n >S	
Di-n-butyl phthalate	84-74-2	5.1E+03	n	3.3E+03	n	3.3E+05	n >S	3.0E+04	n	1.0E+06	n >S		4.4E+03	n	1.7E+03	n	1.7E+05	n >S	1.5E+04	n	1.0E+06	n >S	
Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-)	534-52-1	5.8E+00	n	4.7E-03	n	4.7E-01	n	4.7E+01	n	1.6E+04	n >S		5.2E+00	n	2.3E-03	n	2.3E-01	n	2.4E+01	n	1.0E+03	n	
Dinitrobenzene, 1,3- (dinitrobenzene, 2,4-)	99-65-0	6.5E+00	n	7.6E-03	n	7.6E-01	n	2.4E+02	n	5.9E+04	n >S		6.3E+00	n	3.8E-03	n	3.8E-01	n	1.2E+02	n	3.8E+03	n >S	
Dinitrobenzene, 1,4-	100-25-4	6.5E+00	n	7.2E-03	n	7.2E-01	n	2.7E+02	n	7.7E+04	n >S		6.4E+00	n	3.6E-03	n	3.6E-01	n	1.4E+02	n	5.0E+03	n >S	
Dinitrophenol, 2,4-	51-28-5	1.3E+02	n	9.4E-02	n	9.4E+00	n						1.3E+02	n	4.7E-02	n	4.7E+00	n					
Dinitrophenol, 2,5-	329-71-5	1.3E+02	n	9.6E-02	n	9.6E+00	n						1.3E+02	n	4.8E-02	n	4.8E+00	n					
Dinitrotoluene, 2,4-	121-14-2	6.9E+00	c	5.3E-03	c	5.3E-01	c	2.9E+01	n	4.9E+03	n >S		6.9E+00	c	2.7E-03	c	2.7E-01	c	1.5E+01	n	3.1E+02	n	
Dinitrotoluene, 2,6-	606-20-2	6.9E+00	c	4.8E-03	c	4.8E-01	c	4.3E+01	n	1.1E+04	n >S		6.9E+00	c	2.4E-03	c	2.4E-01	c	2.2E+01	n	7.3E+02	n >S	
Di-n-octyl phthalate	117-84-0	1.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	5.4E+05	n	1.0E+06	n >S		1.3E+03	n	8.1E+05	n >S	1.0E+06	n >S	2.8E+05	n	1.0E+06	n >S	
Dinoseb	88-85-7	6.7E+01	n	3.5E-01	m	3.5E+01	m						6.7E+01	n	1.8E-01	m	1.8E+01	m					
Dioxane 1,4-	123-91-1	5.5E+02	c	1.6E-01	c	1.6E+01	c	3.5E+03	n	2.9E+05	n		5.5E+02	c	8.0E-02	c	8.0E+00	c	1.8E+03	n	1.9E+04	n	
Diphenyl ether	101-84-8	3.2E+02	n	9.2E+01	n	9.2E+03	n >S	2.2E+03	n	5.5E+05	n >S		2.8E+02	n	4.6E+01	n	4.6E+03	n >S	1.1E+03	n	3.5E+04	n >S	
Diphenylamine	122-39-4	1.2E+03	n	9.6E+00	n	9.6E+02	n	3.8E+03	n	8.8E+05	n >S		9.0E+02	n	4.8E+00	n	4.8E+02	n	2.0E+03	n	5.7E+04	n >S	
Diphenylhydrazine, 1,2-	122-66-7	5.6E+00	c	3.2E-02	c	3.2E+00	c	1.4E+02	c	1.1E+05	c >S		5.4E+00	c	1.6E-02	c	1.6E+00	c	7.2E+01	c	7.0E+03	c	
Dipropylene glycol	110-98-5	5.7E+03	n	5.7E+00	n	5.7E+02	n	2.0E+04	n	1.0E+06	n >S		4.5E+03	n	2.8E+00	n	2.8E+02	n	1.0E+04	n	4.5E+05	n	
Diquat	85-00-7	5.0E+01	n	2.0E-01	m	2.0E+01	m	7.7E+01	n	4.3E+05	n		3.1E+01	n	1.0E-01	m	1.0E+01	m	3.9E+01	n	2.0E+05	n	
Disodium iminodiacetate (iminodiacetic acid, disodium salt)	142-73-4	6.7E+02	n	4.7E-01	n	4.7E+01	n						6.7E+02	n	2.3E-01	n	2.3E+01	n					
Disodium iminodiacetate (iminodiacetic acid, disodium salt)	928-72-3	6.7E+02	n	4.7E-01	n	4.7E+01	n						6.7E+02	n	2.3E-01	n	2.3E+01	n					
Disulfoton	298-04-4	2.6E+00	n	3.5E-01	n	3.5E+01	n	1.5E+02	n	1.3E+05	n >S		2.6E+00	n	1.8E-01	n	1.8E+01	n	7.7E+01	n	8.1E+03	n >S	
Diuron	330-54-1	1.3E+02	n	9.3E-01	n	9.3E+01	n	1.1E+04	n	1.0E+06	n >S		1.3E+02	n	4.6E-01	n	4.6E+01	n	5.7E+03	n	4.8E+05	n >S	

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)	
Dodecylphenol, 4-	27193-86-8	3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S			3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S		
Dodecylphenol, 4-	104-43-8	3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S			3.3E+03	n	1.0E+06	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n >S		
Endosulfan	115-29-7	6.6E+01	n	4.6E+00	n	4.6E+02	n >S	8.0E+01	n	3.6E+04	n >S			3.7E+01	n	2.3E+00	n	2.3E+02	n >S	4.1E+01	n	2.4E+03	n >S		
Endosulfan I	959-98-8	6.1E+01	n	3.1E+01	n	3.1E+03	n >S	1.9E+02	n	5.7E+05	n >S			4.7E+01	n	1.5E+01	n	1.5E+03	n >S	9.6E+01	n	3.7E+04	n >S		
Endosulfan II	33213-65-9	2.7E+02	n	9.2E+01	n	9.2E+03	n >S							2.7E+02	n	4.6E+01	n	4.6E+03	n >S						
Endosulfan sulfate	1031-07-8	3.8E+02	n	4.7E+03	n >S	4.7E+05	n >S							3.8E+02	n	2.3E+03	n >S	2.3E+05	n >S						
Endothall	145-73-3	1.3E+03	n	5.3E-01	m	5.3E+01	m							1.3E+03	n	2.7E-01	m	2.7E+01	m						
Endrin	72-20-8	8.8E+00	n	7.5E-01	m	7.5E+01	m	4.7E+02	n	1.0E+06	n >S			8.7E+00	n	3.8E-01	m	3.8E+01	m	2.4E+02	n	7.9E+04	n >S		
Endrin aldehyde	7421-93-4	1.9E+01	n	6.3E+02	n	6.3E+04	n >S							1.9E+01	n	3.1E+02	n	3.1E+04	n >S						
Endrin ketone	53494-70-5	1.9E+01	n	5.1E+01	n	5.1E+03	n	1.9E+03	n	1.0E+06	n >S			1.9E+01	n	2.5E+01	n	2.5E+03	n	9.7E+02	n	1.0E+06	n >S		
Endrin ketone	N-McG/D	1.9E+01	n	5.1E+01	n	5.1E+03	n	1.9E+03	n	1.0E+06	n >S			1.9E+01	n	2.5E+01	n	2.5E+03	n	9.7E+02	n	1.0E+06	n >S		
Epichlorohydrin	106-89-8	2.5E+01	n	1.8E-01	c	1.8E+01	c	2.6E+01	n	1.4E+03	n			1.3E+01	n	9.2E-02	c	9.2E+00	c	1.4E+01	n	9.1E+01	n		
EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioate)	2104-64-5	6.7E-01	n	5.5E-02	n	5.5E+00	n							6.7E-01	n	2.7E-02	n	2.7E+00	n						
Esfenvalerate	66230-04-4	7.4E+01	n	1.2E+02	n >S	1.2E+04	n >S							7.4E+01	n	6.2E+01	n >S	6.2E+03	n >S						
Ethalfluralin (sonolan)	55283-68-6	4.7E+01	c	2.5E+01	c	2.5E+03	c							4.7E+01	c	1.2E+01	c	1.2E+03	c						
Ethanol	64-17-5	8.6E+04	n	1.6E+03	n	1.6E+05	n	8.8E+04	n	1.0E+06	n >S			4.5E+04	n	7.9E+02	n	7.9E+04	n	4.5E+04	n	5.5E+05	n >S		
Ethanol, 2-amino-	141-43-5	1.2E+02	n	8.0E-02	n	8.0E+00	n	9.6E+02	n	2.6E+05	n			1.1E+02	n	4.0E-02	n	4.0E+00	n	4.9E+02	n	1.7E+04	n		
Ethanol, 2-(2-aminoethoxy)-	929-06-6	4.1E+01	n	2.3E-02	n	2.3E+00	n	5.7E+03	n	1.0E+06	n			4.0E+01	n	1.2E-02	n	1.2E+00	n	2.9E+03	n	1.2E+05	n		
Ethanol, 2-(2-ethoxyethoxy)-	111-90-0	1.6E+05	n	1.6E+02	n	1.6E+04	n							1.6E+05	n	8.2E+01	n	8.2E+03	n						
Ethion	563-12-2	2.7E+01	n	7.6E+00	n	7.6E+02	n >S	2.3E+03	n	1.0E+06	n >S			2.7E+01	n	3.8E+00	n	3.8E+02	n >S	1.2E+03	n	4.8E+05	n >S		
Ethoprop	13194-48-4	6.7E+00	n	1.2E-01	n	1.2E+01	n							6.7E+00	n	6.2E-02	n	6.2E+00	n						
Ethoxy ethanol, 2-	110-80-5	2.8E+03	n	7.1E+01	n	7.1E+03	n >S	3.1E+03	n	3.6E+03	n >S			1.5E+03	n	3.6E+01	n	3.6E+03	n >S	1.6E+03	n	2.3E+02	n >S		
Ethyl acetate	141-78-6	1.8E+04	n	4.7E+01	n	4.7E+03	n	2.3E+04	n	7.1E+05	n >S			1.0E+04	n	2.4E+01	n	2.4E+03	n	1.2E+04	n	4.6E+04	n		
Ethyl acrylate	140-88-5	1.3E+02	c	1.2E-01	c	1.2E+01	c	4.8E+02	n	1.4E+04	n			1.3E+02	c	5.9E-02	c	5.9E+00	c	2.5E+02	n	8.9E+02	n		
Ethyl benzene	100-41-4	5.3E+03	n	7.6E+00	m	7.6E+02	m	1.5E+04	n	1.7E+05	n >S			4.0E+03	n	3.8E+00	m	3.8E+02	m	7.9E+03	n	1.1E+04	n >S		
Ethyl dipropylthiocarbamate, S-	759-94-4	1.7E+03	n	7.0E+00	n	7.0E+02	n							1.7E+03	n	3.5E+00	n	3.5E+02	n						
Ethyl ether	60-29-7	8.7E+03	n	1.1E+01	n	1.1E+03	n	1.9E+04	n	1.9E+05	n >S			6.0E+03	n	5.6E+00	n	5.6E+02	n	9.6E+03	n	1.2E+04	n		
Ethyl methacrylate	97-63-2	4.5E+03	n	7.5E+00	n	7.5E+02	n	1.2E+04	n	3.2E+05	n >S			3.3E+03	n	3.8E+00	n	3.8E+02	n	6.1E+03	n	2.1E+04	n		
Ethyl methanesulfonate	62-50-0	3.4E+01	c	1.8E-02	c	1.8E+00	c	1.2E+02	c	3.6E+04	c			2.7E+01	c	8.9E-03	c	8.9E-01	c	6.1E+01	c	2.3E+03	c		
Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)	637-92-3	8.0E+01	n	8.9E-02	n	8.9E+00	n	4.6E+03	n	4.0E+04	n >S			7.9E+01	n	4.5E-02	n	4.5E+00	n	2.4E+03	n	2.6E+03	n		
Ethyl-1-hexanol, 2-	104-76-7	7.9E+03	n	7.6E+01	n	7.6E+03	n	3.8E+04	n	1.0E+06	n >S			6.6E+03	n	3.8E+01	n	3.8E+03	n	1.9E+04	n	3.5E+05	n >S		
Ethyl-2-hexenal, 2-	645-62-5	3.4E+03	n	2.8E+01	n	2.8E+03	n	4.7E+03	n	1.4E+05	n >S			2.0E+03	n	1.4E+01	n	1.4E+03	n	2.4E+03	n	9.2E+03	n >S		
Ethyl-2-methyl benzene, 1-	611-14-3	5.6E+03	n	2.2E+02	n	2.2E+04	n >S	8.4E+03	n	4.2E+05	n >S			3.4E+03	n	1.1E+02	n	1.1E+04	n >S	4.3E+03	n	2.7E+04	n >S		
Ethyl-4-methyl benzene, 1-	622-96-8	5.0E+03	n	2.4E+02	n	2.4E+04	n >S	7.2E+03	n	3.4E+05	n >S			3.0E+03	n	1.2E+02	n	1.2E+04	n >S	3.7E+03	n	2.2E+04	n >S		
Ethylene*	74-85-1																								
Ethylene dibromide (dibromoethane, 1,2-)	106-93-4	7.3E-01	c	2.1E-04	m	2.1E-02	m	9.7E-01	c	2.3E+01	c			4.3E-01	c	1.0E-04	m	1.0E-02	m	5.0E-01	c	1.5E+00	c		
Ethylene glycol	107-21-1	3.0E+03	n	9.4E+01	n	9.4E+03	n	3.1E+03	n	7.9E+05	n			1.6E+03	n	4.7E+01	n	4.7E+03	n	1.6E+03	n	5.1E+04	n		
Ethylene oxide	75-21-8	2.2E+00	c	1.8E-03	c	1.8E-01	c	3.6E+00	c	8.4E+01	c			1.4E+00	c	9.0E-04	c	9.0E-02	c	1.8E+00	c	5.5E+00	c		
Ethylene thiourea	96-45-7	5.3E+00	n	3.8E-03	n	3.8E-01	n	4.9E+02	n	1.0E+05	n >S			5.2E+00	n	1.9E-03	n	1.9E-01	n	2.5E+02	n	6.7E+03	n		
Ethylenediamine	107-15-3	2.5E+03	n	4.6E+00	n	4.6E+02	n	3.7E+03	n	9.6E+05	n			1.5E+03	n	2.3E+00	n	2.3E+02	n	1.9E+03	n	6.2E+04	n		
Ethylenimine	151-56-4	5.5E-02	c	2.8E-05	c	2.8E-03	c	1.3E-01	c	2.8E+01	c			3.9E-02	c	1.4E-05	c	1.4E-03	c	6.8E-02	c	1.8E+00	c		
Ethylhexyl acrylate, 2-	103-11-7	9.8E+01	c	7.7E+00	c	7.7E+02	c	2.8E+03	n	5.4E+05	n >S			9.8E+01	c	3.8E+00	c	3.8E+02	c	1.4E+03	n	3.5E+04	n >S		
Famphur	52-85-7	2.0E+00	n	1.8E-03	n	1.8E-01	n	2.7E+02	n	1.3E+05	n >S			2.0E+00	n	9.1E-04	n	9.1E-02	n	1.4E+02	n	2.5E+04	n >S		
Fensulfothion	115-90-2	6.7E+01	n	3.5E-01	n	3.5E+01	n							6.7E+01	n	1.8E-01	n	1.8E+01	n						
Fenthion	55-38-9	4.7E+00	n	7.9E-02	n	7.9E+00	n							4.7E+00	n	3.9E-02	n	3.9E+00	n						
Fluoranthene	206-44-0	2.3E+03	n	1.9E+03	n >S	1.9E+05	n >S							2.3E+03	n	9.6E+02	n >S	9.6E+04	n >S						
Fluorene	86-73-7	2.3E+03	n	3.0E+02	n	3.0E+04	n >S							2.3E+03	n	1.5E+02	n	1.5E+04	n >S						

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)	
Fluorine (soluble fluoride)	7782-41-4	4.7E+03	n		m		m							4.6E+03	n		m		m							
Fluorochloridone	61213-25-0	4.8E+02	n	4.0E+00	n	4.0E+02	n	1.2E+04	n	1.0E+06	n	>S		4.6E+02	n	2.0E+00	n	2.0E+02	n	6.0E+03	n	5.2E+05	n	>S	
Fonofos	944-22-9	1.3E+02	n	7.1E+00	n	7.1E+02	n							1.3E+02	n	3.6E+00	n	3.6E+02	n						
Formaldehyde	50-00-0	9.3E+02	n	9.8E+00	n	9.8E+02	n	9.9E+02	n	1.7E+05	n			4.9E+02	n	4.9E+00	n	4.9E+02	n	5.1E+02	n	1.1E+04	n		
Formic acid	64-18-6	2.1E+02	n	9.4E+01	n	9.4E+03	n	2.1E+02	n	3.4E+04	n			1.1E+02	n	4.7E+01	n	4.7E+03	n	1.1E+02	n	2.2E+03	n		
Furan	110-00-9	6.9E+01	n	8.1E-02	n	8.1E+00	n	4.3E+02	n	1.3E+03	n			6.0E+01	n	4.1E-02	n	4.1E+00	n	2.2E+02	n	8.6E+01	n		
Furfural	98-01-1	1.8E+02	n	1.5E-01	n	1.5E+01	n	6.1E+02	n	8.7E+04	n			1.4E+02	n	7.4E-02	n	7.4E+00	n	3.1E+02	n	5.7E+03	n		
Glycidylaldehyde	765-34-4	2.7E+01	n	2.2E-02	n	2.2E+00	n	1.5E+02	n	3.3E+04	n			2.3E+01	n	1.1E-02	n	1.1E+00	n	7.7E+01	n	2.1E+03	n		
Glyphosate	1071-83-6	6.7E+03	n	1.3E+00	m	1.3E+02	m							6.7E+03	n	6.7E-01	m	6.7E+01	m						
Heptachlor	76-44-8	1.3E-01	c	1.9E-01	m	1.9E+01	m	9.1E+00	c	3.0E+03	c	>S		1.3E-01	c	9.4E-02	m	9.4E+00	m	4.7E+00	c	1.9E+02	c	>S	
Heptachlor epoxide	1024-57-3	2.4E-01	c	5.8E-02	m	5.8E+00	m	2.4E+01	c	3.5E+04	c	>S		2.4E-01	c	2.9E-02	m	2.9E+00	m	1.2E+01	c	2.2E+03	c	>S	
Heptane, n-	142-82-5	4.8E+03	n	7.2E+02	n	7.2E+04	n	>S 2.8E+05	n	8.5E+05	n	>S		4.7E+03	n	3.6E+02	n	3.6E+04	n	>S 1.4E+05	n	5.5E+04	n	>S	
Heptanoic acid, n-	111-14-8	1.2E+02	n	2.4E+01	n	2.4E+03	n	1.2E+02	n	3.2E+04	n	>S		6.3E+01	n	1.2E+01	n	1.2E+03	n	6.3E+01	n	2.1E+03	n	>S	
Hexachlorobenzene	118-74-1	1.1E+00	c	1.1E+00	m	1.1E+02	m	>S 1.9E+01	c	6.4E+03	c	>S		1.0E+00	c	5.6E-01	m	5.6E+01	m	>S 9.8E+00	c	4.2E+02	c	>S	
Hexachlorobutadiene	87-68-3	2.0E+01	c	3.3E+00	c	3.3E+02	c	2.9E+01	c	2.5E+03	c	>S		1.2E+01	c	1.6E+00	c	1.6E+02	c	1.5E+01	c	1.6E+02	c		
Hexachlorocyclohexane, alpha (alpha-BHC)	319-84-6	2.6E-01	c	7.9E-03	c	7.9E-01	c	1.4E+01	c	8.4E+03	c	>S		2.5E-01	c	4.0E-03	c	4.0E-01	c	7.2E+00	c	5.4E+02	c	>S	
Hexachlorocyclohexane, beta (beta-BHC)	319-85-7	9.3E-01	c	2.9E-02	c	2.9E+00	c	7.2E+01	c	6.6E+04	c	>S		9.2E-01	c	1.4E-02	c	1.4E+00	c	3.7E+01	c	4.2E+03	c	>S	
Hexachlorocyclohexane, delta (delta-BHC)	319-86-8	2.9E+00	c	1.7E-01	c	1.7E+01	c	1.0E+02	c	1.2E+05	c	>S		2.9E+00	c	8.7E-02	c	8.7E+00	c	5.2E+01	c	8.0E+03	c	>S	
Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	58-89-9	1.1E+00	c	9.2E-03	m	9.2E-01	m	5.8E+02	n	3.8E+05	n	>S		1.1E+00	c	4.6E-03	m	4.6E-01	m	3.0E+02	n	2.5E+04	n	>S	
Hexachlorocyclohexane, techn (technical-BHC)	608-73-1	1.3E+00	c	5.0E-02	c	5.0E+00	c	8.9E+01	c	9.7E+04	c	>S		1.3E+00	c	2.5E-02	c	2.5E+00	c	4.6E+01	c	6.3E+03	c	>S	
Hexachlorocyclopentadiene	77-47-4	1.4E+01	n	1.9E+01	m	1.9E+03	m	>S 1.4E+01	n	2.1E+03	n	>S		7.2E+00	n	9.6E+00	m	9.6E+02	m	>S 7.3E+00	n	1.4E+02	n		
Hexachloroethane	67-72-1	6.7E+01	n	1.8E+00	n	1.8E+02	n	9.6E+02	c	1.1E+05	c	>S		6.7E+01	n	9.2E-01	n	9.2E+01	n	5.0E+02	c	6.9E+03	c	>S	
Hexachlorophene	70-30-4	2.0E+01	n	5.9E+03	n >S	5.9E+05	n >S							2.0E+01	n	2.9E+03	n >S	2.9E+05	n >S						
Hexachloropropylene	1888-71-7	6.7E+01	n	1.0E+01	n	1.0E+03	n	9.9E+02	c	1.8E+05	c	>S		6.7E+01	n	5.2E+00	n	5.2E+02	n	5.1E+02	c	1.2E+04	c	>S	
Hexanal, 2-ethyl-	123-05-7	3.3E+03	n	2.6E+01	n	2.6E+03	n	4.9E+03	n	1.6E+05	n	>S		2.0E+03	n	1.3E+01	n	1.3E+03	n	2.5E+03	n	1.0E+04	n	>S	
Hexane, n-	110-54-3	3.3E+03	n	2.0E+02	n	2.0E+04	n	>S 1.0E+04	n	5.3E+03	n	>S		2.5E+03	n	1.0E+02	n	1.0E+04	n	>S 5.3E+03	n	3.4E+02	n		
Hexanediamine, 1,6-	124-09-4	2.0E+02	n	2.5E-01	n	2.5E+01	n	4.1E+02	n	1.4E+05	n			1.4E+02	n	1.2E-01	n	1.2E+01	n	2.1E+02	n	9.1E+03	n		
Hexanediol, 1,6-	629-11-8	3.0E+05	n	2.6E+02	n	2.6E+04	n	1.0E+06	n	1.0E+06	n	>S		2.8E+05	n	1.3E+02	n	1.3E+04	n	1.0E+06	n	1.0E+06	n	>S	
Hexanoic acid	142-62-1	1.3E+02	n	3.0E+00	n	3.0E+02	n	1.4E+02	n	4.0E+04	n	>S		6.9E+01	n	1.5E+00	n	1.5E+02	n	7.0E+01	n	2.6E+03	n		
Hexanone, 2-	591-78-6	1.1E+02	n	3.9E+00	n	3.9E+02	n	1.1E+02	n	4.1E+03	n			5.6E+01	n	1.9E+00	n	1.9E+02	n	5.7E+01	n	2.6E+02	n		
Hexazinone	51235-04-2	1.0E+03	n	2.7E+00	n	2.7E+02	n	1.9E+03	n	8.8E+05	n	>S		6.7E+02	n	1.4E+00	n	1.4E+02	n	9.7E+02	n	1.5E+05	n	>S	
Hexene, 1-	592-41-6	1.6E+03	n	2.3E+02	n	2.3E+04	n	>S 2.0E+03	n	3.7E+03	n	>S		9.1E+02	n	1.1E+02	n	1.1E+04	n	>S 1.0E+03	n	2.4E+02	n		
Hexylene glycol (2-methyl-2,4-pentanediol)	107-41-5	2.5E+01	n	1.5E+01	n	1.5E+03	n	2.5E+01	n	7.9E+03	n			1.3E+01	n	7.4E+00	n	7.4E+02	n	1.3E+01	n	5.1E+02	n		
Hydrazine	302-01-2	3.8E-01	c	5.8E-04	c	5.8E-02	c	4.6E-01	c	9.8E+01	c			2.1E-01	c	2.9E-04	c	2.9E-02	c	2.4E-01	c	6.4E+00	c		
Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)	1191-25-9	1.6E+02	n	3.0E+00	n	3.0E+02	n	1.6E+02	n	5.6E+04	n	>S		8.1E+01	n	1.5E+00	n	1.5E+02	n	8.3E+01	n	4.1E+03	n		
Hydrogen chloride (hydrochloric acid)*	7647-01-0																								
Hydroquinone	123-31-9	8.4E+01	c	3.3E-02	c	3.3E+00	c							8.4E+01	c	1.7E-02	c	1.7E+00	c						
Indene	95-13-6	1.0E+02	n	7.1E+00	n	7.1E+02	n	1.1E+02	n	4.0E+03	n			5.6E+01	n	3.6E+00	n	3.6E+02	n	5.8E+01	n	2.6E+02	n		
Indeno-1,2,3-cd-pyrene	193-39-5	5.7E+00	c	1.7E+02	c	1.7E+04	c	>S 2.5E+04	c	1.0E+06	c	>S		5.7E+00	c	8.7E+01	c	8.7E+03	c	>S 1.3E+04	c	1.0E+06	c	>S	
Iron*	7439-89-6																								
Isoamyl alcohol	123-51-3	4.0E+02	n	3.2E-01	n	3.2E+01	n	2.3E+04	n	1.0E+06	n	>S		4.0E+02	n	1.6E-01	n	1.6E+01	n	1.2E+04	n	1.1E+05	n	>S	
Isobutyl alcohol	78-83-1	5.6E+03	n	1.6E+01	n	1.6E+03	n	7.3E+03	n	5.9E+05	n	>S		3.3E+03	n	7.9E+00	n	7.9E+02	n	3.8E+03	n	3.8E+04	n		
Isobutylene (2-methyl-1-propene)	115-11-7	1.0E+06	n					1.0E+06	n	1.0E+06	n	>S		8.7E+05	n					8.7E+05	n	1.2E+05	n	>S	
Isobutyric acid (2-methylpropanoic acid)	79-31-2	1.1E+02	n	2.3E+01	n	2.3E+03	n	1.1E+02	n	2.8E+04	n			5.9E+01	n	1.2E+01	n	1.2E+03	n	5.9E+01	n	1.8E+03	n		
Isodecanol	25339-17-7	7.1E+01	n	3.0E+00	n	3.0E+02	n							7.1E+01	n	1.5E+00	n	1.5E+02	n						
Isodrin	465-73-6	2.7E-02	c	1.5E+00	c	1.5E+02	c	1.7E+00	c	9.4E+03	c	>S		2.7E-02	c	7.4E-01	c	7.4E+01	c	9.0E-01	c	6.1E+02	c		
Isophorone	78-59-1	2.2E+03	n	3.0E+00	c	3.0E+02	c	2.7E+03	n	3.2E+05	n	>S		1.2E+03	n	1.5E+00	c	1.5E+02	c	1.4E+03	n	2.1E+04	n	>S	

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area																30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	GWSoil fo Secondary MCL (mg/kg)	
Isopropyl acetate	108-21-4	5.7E+03	n	4.0E+00	n	4.0E+02	n							5.7E+03	n	2.0E+00	n	2.0E+02	n						
Isopropyl alcohol	67-63-0	1.1E+04	n	1.0E+01	n	1.0E+03	n	3.4E+04	n	1.0E+06	n	>S		8.4E+03	n	5.0E+00	n	5.0E+02	n	1.7E+04	n	2.0E+05	n		
Isosafrole	120-58-1	1.7E+01	c	1.3E-01	c	1.3E+01	c	9.1E+01	c	1.3E+04	c	>S		1.5E+01	c	6.5E-02	c	6.5E+00	c	4.7E+01	c	8.6E+02	c		
Kelthane (dicofol)	115-32-2	2.7E+02	n	7.4E+01	n	7.4E+03	n	>S						2.7E+02	n	3.7E+01	n	3.7E+03	n	>S					
Kepone (chlordecone)	143-50-0	4.5E-01	c	1.2E-01	c	1.2E+01	c	4.9E+01	c	2.5E+05	c	>S		4.4E-01	c	6.2E-02	c	6.2E+00	c	2.5E+01	c	1.6E+04	c	>S	
Lead (inorganic)	7439-92-1	5.0E+02	n	3.0E+00	a	>S	3.0E+02	a	>S					5.0E+02	n	1.5E+00	a	>S	1.5E+02	a	>S				
Limonene, d-*	5989-27-5																								
Lithium[5]	7439-93-2	1.3E+02	n		n		n							1.3E+02	n		n		n						
Magnesium*	7439-95-4																								
Malathion	121-75-5	1.1E+03	n	6.6E+00	n	6.6E+02	n	5.0E+03	n	1.0E+06	n	>S		8.8E+02	n	3.3E+00	n	3.3E+02	n	2.6E+03	n	2.0E+05	n	>S	
Maleic anhydride	108-31-6	2.0E+02	n	7.2E+00	n	7.2E+02	n	2.1E+02	n	4.6E+04	n	>S		1.1E+02	n	3.6E+00	n	3.6E+02	n	1.1E+02	n	3.0E+03	n	>S	
Maleic hydrazide	123-33-1	1.4E+04	n	3.6E+01	n	3.6E+03	n	2.5E+04	n	1.0E+06	n	>S		9.3E+03	n	1.8E+01	n	1.8E+03	n	1.3E+04	n	1.0E+06	n	>S	
Malononitrile	109-77-3	6.6E+00	n	5.2E-03	n	5.2E-01	n	1.2E+03	n	3.2E+05	n			6.6E+00	n	2.6E-03	n	2.6E-01	n	6.3E+02	n	2.0E+04	n		
Mancozeb	8018-01-7	2.0E+03	n	1.8E+00	n	1.8E+02	n	>S						2.0E+03	n	9.0E-01	n	9.0E+01	n	>S					
Manganese	7439-96-5	3.7E+03	n	1.2E+03	n	>S	1.2E+05	n	>S				5.0E+01	3.4E+03	n	5.8E+02	n	>S	5.8E+04	n	>S				2.5E+01
MCPA (4-(chloro-2-methylphenoxy) acetic acid)	94-74-6	3.3E+01	n	2.3E-02	n	2.3E+00	n							3.3E+01	n	1.2E-02	n	1.2E+00	n						
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	7085-19-0/ 93-65-2	6.7E+01	n	4.7E-02	n	4.7E+00	n							6.7E+01	n	2.3E-02	n	2.3E+00	n						
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	93-65-2	6.7E+01	n	4.7E-02	n	4.7E+00	n							6.7E+01	n	2.3E-02	n	2.3E+00	n						
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	7085-19-0	6.7E+01	n	4.7E-02	n	4.7E+00	n							6.7E+01	n	2.3E-02	n	2.3E+00	n						
Mercuric chloride (pH = 4.9)	7487-94-7	3.6E+00	n	7.8E-03	m	7.8E-01	m	>S	4.6E+00	n	2.8E+01	n	>S	2.1E+00	n	3.9E-03	m	3.9E-01	m	>S	2.4E+00	n	1.8E+00	n	>S	
Mercuric chloride (pH = 6.8)	7487-94-7	8.3E+00	n	2.1E+00	m	2.1E+02	m	>S	1.6E+01	n	7.6E+03	n	>S	5.5E+00	n	1.0E+00	m	1.0E+02	m	>S	8.0E+00	n	4.9E+02	n	>S	
Mercury (pH = 4.9)[6]	7439-97-6	3.6E+00	n	7.8E-03	m	7.8E-01	m	>S	4.6E+00	n	2.8E+01	n	>S	2.1E+00	n	3.9E-03	m	3.9E-01	m	>S	2.4E+00	n	1.8E+00	n	>S	
Merphos	150-50-5	2.0E+00	n	6.5E+00	n	6.5E+02	n	>S						2.0E+00	n	3.2E+00	n	3.2E+02	n	>S					
Methacrylic acid (2-methyl-2-propenoic acid)	79-41-4	6.3E+02	n	4.7E-01	n	4.7E+01	n	2.7E+03	n	2.3E+05	n	>S		5.2E+02	n	2.3E-01	n	2.3E+01	n	1.4E+03	n	1.5E+04	n		
Methacrylonitrile	126-98-7	7.1E+00	n	5.0E-03	n	5.0E-01	n	5.3E+01	n	2.1E+03	n			6.3E+00	n	2.5E-03	n	2.5E-01	n	2.7E+01	n	1.3E+02	n		
Methanol	67-56-1	9.2E+03	n	2.4E+01	n	2.4E+03	n	1.2E+04	n	1.0E+06	n			5.3E+03	n	1.2E+01	n	1.2E+03	n	6.1E+03	n	7.6E+04	n		
Methapyrilene	91-80-5	1.0E+00	c	5.3E-04	c	5.3E-02	c	9.0E+01	n	3.1E+04	n	>S		1.0E+00	c	2.6E-04	c	2.6E-02	c	4.6E+01	n	2.0E+03	n		
Methomyl	16752-77-5	7.9E+02	n	5.1E+00	n	5.1E+02	n	1.5E+03	n	5.9E+05	n	>S		5.3E+02	n	2.5E+00	n	2.5E+02	n	7.7E+02	n	4.0E+04	n		
Methoxychlor	72-43-5	2.7E+02	n	1.2E+02	m	1.2E+04	m	>S	3.1E+04	n	1.0E+06	n	>S	2.7E+02	n	6.2E+01	m	6.2E+03	m	>S	1.6E+04	n	1.0E+06	n	>S	
Methoxyethanol, 2-	109-86-4	3.1E+02	n					3.1E+02	n	4.5E+02	n	>S		1.6E+02	n					1.6E+02	n	2.9E+01	n		
Methyl acetate (acetic acid, methyl ester)	79-20-9	8.3E+03	n	4.9E+01	n	4.9E+03	n	9.2E+03	n	2.7E+05	n			4.5E+03	n	2.4E+01	n	2.4E+03	n	4.7E+03	n	1.7E+04	n		
Methyl acrylate	96-33-3	6.5E+01	n	1.0E-01	n	1.0E+01	n	1.1E+02	n	2.0E+03	n			4.1E+01	n	5.2E-02	n	5.2E+00	n	5.5E+01	n	1.3E+02	n		
Methyl amyl ketone (2-heptanone)	110-43-0	3.9E+03	n	4.7E+00	n	4.7E+02	n	1.1E+05	n	1.0E+06	n	>S		3.8E+03	n	2.4E+00	n	2.4E+02	n	5.7E+04	n	2.8E+05	n	>S	
Methyl chrysene, 1-	3351-28-8	5.8E+02	c	2.2E+04	c	>S	1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	5.8E+02	c	1.1E+04	c	>S	1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	
Methyl chrysene, 2-	3351-32-4	5.8E+02	c	2.2E+04	c	>S	1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	5.8E+02	c	1.1E+04	c	>S	1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	
Methyl chrysene, 6-	1705-85-7	5.7E+01	c	1.8E+03	c	>S	1.8E+05	c	>S	2.3E+05	c	1.0E+06	c	>S	5.7E+01	c	8.8E+02	c	>S	8.8E+04	c	>S	1.2E+05	c	1.0E+06	c	>S	
Methyl cyclohexane	108-87-2	4.1E+04	n	1.6E+04	n	>S	1.0E+06	n	>S	4.6E+04	n	1.8E+05	n	>S	2.2E+04	n	7.8E+03	n	>S	7.8E+05	n	>S	2.4E+04	n	1.2E+04	n	>S	
Methyl ethyl ketone (2-butanone)	78-93-3	3.4E+04	n	2.9E+01	n	2.9E+03	n	1.1E+05	n	1.0E+06	n	>S		2.7E+04	n	1.5E+01	n	1.5E+03	n	5.9E+04	n	3.5E+05	n	>S	
Methyl iodide (iodomethane)	74-88-4	7.1E+01	n	1.1E-01	n	1.1E+01	n	1.8E+02	n	5.6E+02	n			5.2E+01	n	5.7E-02	n	5.7E+00	n	9.5E+01	n	3.6E+01	n		
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5.9E+03	n	4.9E+00	n	4.9E+02	n	5.8E+04	n	1.0E+06	n	>S		5.4E+03	n	2.5E+00	n	2.5E+02	n	3.0E+04	n	1.1E+05	n	>S	
Methyl mercury	22967-92-6	8.0E+00	n		n		n							8.0E+00	n		n		n						
Methyl methacrylate	80-62-6	9.8E+03	n	9.8E+01	n	9.8E+03	n	1.1E+04	n	2.3E+05	n	>S		5.3E+03	n	4.9E+01	n	4.9E+03	n	5.5E+03	n	1.5E+04	n		
Methyl methanesulfonate	66-27-3	3.3E+01	c	1.8E-02	c	1.8E+00	c	1.1E+02	c	3.2E+04	c			2.6E+01	c	8.9E-03	c	8.9E-01	c	5.7E+01	c	2.1E+03	c		
Methyl parathion	298-00-0	1.5E+01	n	1.7E-01	n	1.7E+01	n	2.1E+02	n	1.2E+05	n	>S		1.4E+01	n	8.5E-02	n	8.5E+00	n	1.1E+02	n	8.1E+03	n	>S	
Methyl-1-butene, 2-	563-46-2	4.8E+03	n	6.5E+01	n	6.5E+03	n	>S	2.8E+05	n	3.4E+05	n	>S	4.7E+03	n	3.2E+01	n	3.2E+03	n	>S	1.4E+05	n	2.2E+04	n	>S	
Methyl-1-propanal, 2- (isobutyraldehyde)	78-84-2	1.9E+03	n	2.1E+00	n	2.1E+02	n	4.5E+03	n	9.5E+04	n			1.3E+03	n	1.0E+00	n	1.0E+02	n	2.3E+03	n	6.2E+03	n		
Methyl-2-butene, 2-	513-35-9	4.8E+03	n	3.9E+01	n	3.9E+03	n	2.8E+05	n	4.0E+05	n	>S		4.7E+03	n	1.9E+01	n	1.9E+03	n	1.4E+05	n	2.6E+04	n	>S	

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

0.5 acre source area

Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	note	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)
Methyl-2-pentenal, 2-	623-36-9	3.2E+00	c	1.5E-03	c	1.5E-01	c	9.4E+01	n	2.2E+03	n	
Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	99-55-8	1.4E+02	c	1.4E-01	c	1.4E+01	c					
Methylcholanthrene, 3-	56-49-5	1.9E-01	c	1.5E+01	c	1.5E+03	c >S	1.8E+03	c	1.0E+06	c >S	
Methylene bromide (dibromomethane)	74-95-3	2.6E+02	n	1.1E+00	c	1.1E+02	c	2.7E+02	n	7.3E+03	n	
Methylene chloride (dichloromethane)	75-09-2	3.9E+02	c	1.3E-02	m	1.3E+00	m	7.6E+02	c	3.3E+03	c	
Methylene-bis (2-chloroaniline) 4,4'-	101-14-4	4.6E+01	c	2.9E+00	c	2.9E+02	c	2.7E+03	c	1.0E+06	c >S	
Methylmecury hydroxide	1184-57-2	9.9E-01	n	4.8E-03	n	4.8E-01	n	1.2E+00	n	2.8E+02	n	
Methylnaphthalene, 1-	90-12-0	1.5E+02	c	2.9E+00	c	2.9E+02	c					
Methylnaphthalene, 2-	91-57-6	2.5E+02	n	1.7E+01	n	1.7E+03	n					
Methylpyrrolidone, N-	872-50-4	1.2E+03	n	9.6E-01	n	9.6E+01	n	1.2E+04	n	1.0E+06	n	
Methyltetrahydrofuran, 2-	96-47-9	1.5E+02	c	2.7E-01	c	2.7E+01	c	1.9E+02	c	4.2E+03	c	
Methyltetrahydropyran, 2-	10141-72-7	1.7E+02	c	3.3E-01	c	3.3E+01	c	2.2E+02	c	5.7E+03	c	
Metolachlor	51218-45-2	1.0E+04	n	1.1E+02	n	1.1E+04	n					
Metribuzin	21087-64-9	1.7E+03	n	1.2E+00	n	1.2E+02	n					
Mirex	2385-85-5	1.3E+01	n	4.5E+03	n >S	4.5E+05	n >S					
Molinate	2212-67-1	1.3E+02	n	1.9E-01	n	1.9E+01	n					
Molybdenum	7439-98-7	1.6E+02	n	4.9E+01	n >S	4.9E+03	n >S					
Monocrotophos	2157-98-4	2.2E+01	n	2.9E-02	n	2.9E+00	n	4.8E+01	n	4.4E+05	n	
Morpholine	110-91-8	1.4E+02	n	2.4E+04	n	1.0E+06	n	1.4E+02	n	4.0E+04	n	
MTBE (methyl tert-butyl ether)[7]	1634-04-4	8.0E+02	n	6.2E-01	n	6.2E+01	n	1.4E+03	c	1.0E+04	c	3.8E-02
Naled	300-76-5	8.7E+01	n	3.5E-01	n	3.5E+01	n >S	2.5E+02	n	1.6E+04	n >S	
Naphthalene	91-20-3	2.2E+02	n	3.1E+01	n	3.1E+03	n >S	2.7E+02	n	2.0E+04	n >S	
Naphthoquinone, 1,4-	130-15-4	1.9E+01	n	4.6E-01	n	4.6E+01	n	1.9E+01	n	4.4E+03	n >S	
Naphthylamine, 1-	134-32-7	1.3E+03	n	9.4E+00	n	9.4E+02	n					
Naphthylamine, 2-	91-59-8	2.6E+00	c	1.3E-02	c	1.3E+00	c					
Napropamide	15299-99-7	6.7E+03	n	5.5E+02	n	5.5E+04	n >S					
Neopentyl glycol	126-30-7	2.0E+04	n	1.5E+01	n	1.5E+03	n					
Nickel and compounds	7440-02-0	8.4E+02	n	1.6E+02	n >S	1.6E+04	n >S					
Nitrate	14797-55-8	1.3E+05	n	1.9E+01	m	1.9E+03	m					
Nitrite	14797-65-0	8.0E+03	n		m		m					
Nitroaniline, 2-	88-74-4	1.4E+01	n	2.2E-02	n	2.2E+00	n	4.8E+01	n	1.2E+04	n >S	
Nitroaniline, 3-	99-09-2	2.0E+01	n	2.6E-02	n	2.6E+00	n	9.0E+02	n	2.5E+05	n >S	
Nitroaniline, 4-	100-01-6	2.2E+02	n	1.1E-01	c	1.1E+01	c	1.2E+03	n	3.4E+05	n >S	
Nitrobenzene	98-95-3	6.6E+01	c	3.5E-01	n	3.5E+01	n	6.6E+01	c	5.2E+03	c	
Nitroglycerin	55-63-0	6.7E+00	n	1.4E-02	n	1.4E+00	n					
Nitrophenol, 2-	88-75-5	1.1E+02	n	1.3E-01	n	1.3E+01	n	8.0E+02	n	1.8E+05	n >S	
Nitrophenol, 3-	554-84-7	1.2E+02	n	2.3E-01	n	2.3E+01	n	1.5E+03	n	1.0E+06	n >S	
Nitrophenol, 4-	100-02-7	7.3E+01	n	1.0E-01	n	1.0E+01	n	1.6E+02	n	4.8E+04	n >S	
Nitropropane, 2-	79-46-9	1.3E-01	c	7.1E-03	n	7.1E-01	n	1.3E-01	c	3.6E+00	c	
Nitroquinoline-N-oxide, 4-	56-57-5	4.0E-01	c	2.3E-04	c	2.3E-02	c	1.9E+00	c	2.7E+04	c	
Nitrosodiethanolamine	1116-54-7	1.7E+00	c	6.6E-04	c	6.6E-02	c					
Nitrosodiethylamine, n-	55-18-5	2.5E-02	c	1.2E-05	c	1.2E-03	c	6.6E-02	c	1.5E+01	c	
Nitrosodimethylamine, n-	62-75-9	7.4E-02	c	3.7E-05	c	3.7E-03	c	2.0E-01	c	4.2E+01	c	
Nitrosodi-n-butylamine, n-	924-16-3	4.7E-01	c	1.9E-03	c	1.9E-01	c	1.0E+00	c	5.2E+01	c	
Nitrosodi-n-propylamine, n-	621-64-7	4.0E-01	c	3.5E-04	c	3.5E-02	c					
Nitrosodiphenylamine	86-30-6	5.7E+02	c	2.8E+00	c	2.8E+02	c					
Nitroso-methyl-ethyl-amine, n-	10595-95-6	2.8E-01	c	1.1E-04	c	1.1E-02	c					

30 acre source area

Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	note	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)
Methyl-2-pentenal, 2-	623-36-9	3.2E+00	c	7.3E-04	c	7.3E-02	c	4.9E+01	n	1.4E+02	n	
Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	99-55-8	1.4E+02	c	7.1E-02	c	7.1E+00	c					
Methylcholanthrene, 3-	56-49-5	1.9E-01	c	7.6E+00	c	7.6E+02	c >S	9.0E+02	c	1.0E+06	c >S	
Methylene bromide (dibromomethane)	74-95-3	1.4E+02	n	5.6E-01	c	5.6E+01	c	1.4E+02	n	4.7E+02	n	
Methylene chloride (dichloromethane)	75-09-2	2.6E+02	c	6.5E-03	m	6.5E-01	m	3.9E+02	c	2.2E+02	c	
Methylene-bis (2-chloroaniline) 4,4'-	101-14-4	4.5E+01	c	1.4E+00	c	1.4E+02	c	1.4E+03	c	4.1E+05	c >S	
Methylmecury hydroxide	1184-57-2	5.5E-01	n	2.4E-03	n	2.4E-01	n	6.0E-01	n	2.0E+01	n	
Methylnaphthalene, 1-	90-12-0	1.5E+02	c	1.5E+00	c	1.5E+02	c					
Methylnaphthalene, 2-	91-57-6	2.5E+02	n	8.5E+00	n	8.5E+02	n					
Methylpyrrolidone, N-	872-50-4	1.1E+03	n	4.8E-01	n	4.8E+01	n	6.0E+03	n	2.3E+05	n	
Methyltetrahydrofuran, 2-	96-47-9	8.6E+01	c	1.4E-01	c	1.4E+01	c	9.7E+01	c	2.7E+02	c	
Methyltetrahydropyran, 2-	10141-72-7	9.8E+01	c	1.6E-01	c	1.6E+01	c	1.1E+02	c	3.7E+02	c	
Metolachlor	51218-45-2	1.0E+04	n	5.5E+01	n	5.5E+03	n					
Metribuzin	21087-64-9	1.7E+03	n	6.1E-01	n	6.1E+01	n					
Mirex	2385-85-5	1.3E+01	n	2.2E+03	n >S	2.2E+05	n >S					
Molinate	2212-67-1	1.3E+02	n	9.6E-02	n	9.6E+00	n					
Molybdenum	7439-98-7	1.6E+02	n	2.5E+01	n >S	2.5E+03	n >S					
Monocrotophos	2157-98-4	1.5E+01	n	1.5E-02	n	1.5E+00	n	2.5E+01	n	2.1E+05	n	
Morpholine	110-91-8	7.2E+01	n	1.2E+04	n	1.0E+06	n	7.2E+01	n	2.6E+03	n <GW Ing	
MTBE (methyl tert-butyl ether)[7]	1634-04-4	5.9E+02	c	3.1E-01	n	3.1E+01	n	7.1E+02	c	6.6E+02	c	1.9E-02
Naled	300-76-5	6.6E+01	n	1.8E-01	n	1.8E+01	n >S	1.3E+02	n	1.0E+03	n >S	
Naphthalene	91-20-3	1.2E+02	n	1.6E+01	n	1.6E+03	n >S	1.4E+02	n	1.3E+03	n >S	
Naphthoquinone, 1,4-	130-15-4	9.7E+00	n	2.3E-01	n	2.3E+01	n	9.9E+00	n	2.8E+02	n	
Naphthylamine, 1-	134-32-7	1.3E+03	n	4.7E+00	n	4.7E+02	n					
Naphthylamine, 2-	91-59-8	2.6E+00	c	6.4E-03	c	6.4E-01	c					
Napropamide	15299-99-7	6.7E+03	n	2.7E+02	n	2.7E+04	n >S					
Neopentyl glycol	126-30-7	2.0E+04	n	7.3E+00	n	7.3E+02	n					
Nickel and compounds	7440-02-0	8.3E+02	n	7.9E+01	n >S	7.9E+03	n >S					
Nitrate	14797-55-8	1.3E+05	n	9.6E+00	m	9.6E+02	m					
Nitrite	14797-65-0	8.0E+03	n		m		m					
Nitroaniline, 2-	88-74-4	1.1E+01	n	1.1E-02	n	1.1E+00	n	2.4E+01	n	7.7E+02	n	
Nitroaniline, 3-	99-09-2	1.9E+01	n	1.3E-02	n	1.3E+00	n	4.6E+02	n	1.6E+04	n >S	
Nitroaniline, 4-	100-01-6	1.9E+02	n	5.4E-02	c	5.4E+00	c	6.2E+02	n	2.2E+04	n >S	
Nitrobenzene	98-95-3	3.4E+01	c	1.8E-01	n	1.8E+01	n	3.4E+01	c	3.4E+02	c	
Nitroglycerin	55-63-0	6.7E+00	n	6.9E-03	n	6.9E-01	n					
Nitrophenol, 2-	88-75-5	1.0E+02	n	6.7E-02	n	6.7E+00	n	4.1E+02	n	1.2E+04	n	
Nitrophenol, 3-	554-84-7	1.1E+02	n	1.1E-01	n	1.1E+01	n	7.7E+02	n	5.4E+05	n >S	
Nitrophenol, 4-	100-02-7	5.1E+01	n	5.0E-02	n	5.0E+00	n	8.3E+01	n	3.1E+03	n	
Nitropropane, 2-	79-46-9	6.8E-02	c	3.5E-03	n	3.5E-01	n	6.8E-02	c	2.3E-01	c	
Nitroquinoline-N-oxide, 4-	56-57-5	3.3E-01	c	1.2E-04	c	1.2E-02	c	9.7E-01	c	1.3E+04	c	
Nitrosodiethanolamine	1116-54-7	1.7E+00	c	3.3E-04	c	3.3E-02	c					
Nitrosodiethylamine, n-	55-18-5	1.8E-02	c	6.2E-06	c	6.2E-04	c	3.4E-02	c	9.7E-01	c	
Nitrosodimethylamine, n-	62-75-9	5.5E-02	c	1.8E-05	c	1.8E-03	c	1.0E-01	c	2.7E+00	c	
Nitrosodi-n-butylamine, n-	924-16-3	3.3E-01	c	9.4E-04	c	9.4E-02	c	5.3E-01	c	3.4E+00	c	
Nitrosodi-n-propylamine, n-	621-64-7	4.0E-01	c	1.8E-04	c	1.8E-02	c					
Nitrosodiphenylamine	86-30-6	5.7E+02	c	1.4E+00	c	1.4E+02	c					
Nitroso-methyl-ethyl-amine, n-	10595-95-6	2.8E-01	c	5.7E-05	c	5.7E-03	c					

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	note	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	note	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	note	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3	GWSoil for Secondary MCL (mg/kg)	
Nitrosomorpholine, N-	59-89-2	5.0E-01	c	2.6E-04	c	2.6E-02	c	1.7E+00	c	5.2E+02	c			3.9E-01	c	1.3E-04	c	1.3E-02	c	8.8E-01	c	3.4E+01	c		
Nitroso-n-ethylurea, n-	759-73-9	3.4E-02	c	2.1E-05	c	2.1E-03	c							3.4E-02	c	1.0E-05	c	1.0E-03	c						
Nitrosopiperidine, N-	100-75-4	3.6E-01	c	2.1E-04	c mql	2.1E-02	c	1.3E+00	c	3.5E+02	c			2.9E-01	c	1.0E-04	c mql	1.0E-02	c	6.9E-01	c	2.3E+01	c		
Nitrosopyrrolidine, n-	930-55-2	1.6E+00	c	8.4E-04	c	8.4E-02	c	5.8E+00	c	1.9E+03	c			1.3E+00	c	4.2E-04	c	4.2E-02	c	3.0E+00	c	1.2E+02	c		
Nitrotoluene, m-	99-08-1	3.8E+02	n	1.8E+00	n	1.8E+02	n	8.7E+02	n	5.0E+04	n	>S		2.7E+02	n	9.2E-01	n	9.2E+01	n	4.5E+02	n	3.2E+03	n	>S	
Nitrotoluene, o-	88-72-2	2.1E+01	c	3.1E-02	c	3.1E+00	c	9.5E+02	n	5.8E+04	n	>S		2.1E+01	c	1.6E-02	c	1.6E+00	c	4.9E+02	n	3.8E+03	n	>S	
Nitrotoluene, p-	99-99-0	2.0E+02	n	4.3E-01	c	4.3E+01	c	8.6E+02	n	4.9E+04	n	>S		1.7E+02	n	2.2E-01	c	2.2E+01	c	4.4E+02	n	3.2E+03	n	>S	
Nonachlor, cis-	5103-73-1	5.6E+00	c	1.3E+01	c	1.3E+03	c >S	1.2E+03	c	1.0E+06	c	>S		5.6E+00	c	6.3E+00	c	6.3E+02	c >S	6.4E+02	c	2.4E+05	c	>S	
Nonachlor, trans-	39765-80-5	5.6E+00	c	1.3E+01	c	1.3E+03	c >S	1.2E+03	c	1.0E+06	c	>S		5.6E+00	c	6.3E+00	c	6.3E+02	c >S	6.4E+02	c	2.4E+05	c	>S	
Nonanal	124-19-6	1.3E+04	n	1.5E+02	n	1.5E+04	n >S							1.3E+04	n	7.4E+01	n	7.4E+03	n >S						
Nonene, 1-n	124-11-8	1.5E+02	n	3.3E+03	n >S	3.3E+05	n >S	1.5E+02	n	1.5E+03	n	>S		7.8E+01	n	1.6E+03	n >S	1.6E+05	n >S	7.9E+01	n	9.4E+01	n	<GW Ing	
Nonylphenol	104-40-5	6.5E+03	n	3.0E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S		6.5E+03	n	1.5E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S	
Nonylphenol	25154-52-3	6.5E+03	n	3.0E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S		6.5E+03	n	1.5E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S	
Nonylphenol	84852-15-3	6.5E+03	n	3.0E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S		6.5E+03	n	1.5E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S	
Nonylphenol ethoxylate	9016-45-9	7.9E+03	n	7.5E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S		7.9E+03	n	3.7E+05	n >S	1.0E+06	n >S	1.0E+06	n	1.0E+06	n	>S	
Octamethylpyrophosphoramide	152-16-9	1.3E+02	n	9.4E-02	n	9.4E+00	n							1.3E+02	n	4.7E-02	n	4.7E+00	n						
Octanone	106-68-3	4.9E+03	n	1.1E+01	n	1.1E+03	n	9.0E+05	n	1.0E+06	n	>S		4.9E+03	n	5.5E+00	n	5.5E+02	n	4.6E+05	n	1.0E+06	n	>S	
Oxamyl	23135-22-0	1.7E+03	n	4.2E-01	m	4.2E+01	m							1.7E+03	n	2.1E-01	m	2.1E+01	m						
Oxychlordane	27304-13-8	5.6E+00	c	1.3E+01	c	1.3E+03	c >S	1.2E+03	c	1.0E+06	c	>S		5.6E+00	c	6.3E+00	c	6.3E+02	c >S	6.4E+02	c	2.4E+05	c	>S	
Paraquat	1910-42-5	3.0E+02	n	2.1E-01	n	2.1E+01	n							3.0E+02	n	1.1E-01	n	1.1E+01	n						
Parathion (ethyl parathion)	56-38-2	1.2E+02	n	3.3E+01	n	3.3E+03	n >S	1.8E+02	n	3.4E+05	n	>S		7.3E+01	n	1.7E+01	n	1.7E+03	n >S	9.0E+01	n	2.2E+04	n	>S	
Pebulate	1114-71-2	3.3E+03	n	2.3E+01	n	2.3E+03	n >S							3.3E+03	n	1.2E+01	n	1.2E+03	n >S						
Pendimethalin	40487-42-1	2.5E+03	n	7.5E+03	n >S	7.5E+05	n >S							2.5E+03	n	3.7E+03	n >S	3.7E+05	n >S						
Pentachlorobenzene	608-93-5	5.3E+01	n	2.5E+01	n	2.5E+03	n >S	3.0E+04	n	1.0E+06	n	>S		5.3E+01	n	1.2E+01	n	1.2E+03	n >S	1.5E+04	n	6.3E+05	n	>S	
Pentachloroethane	76-01-7	3.9E+01	c	9.7E-02	c	9.7E+00	c	9.4E+01	c	2.8E+03	c			2.8E+01	c	4.8E-02	c	4.8E+00	c	4.8E+01	c	1.8E+02	c		
Pentachloronitrobenzene	82-68-8	1.0E+01	c	1.8E+00	c	1.8E+02	c >S	2.2E+02	n	6.5E+04	n	>S		1.0E+01	c	9.2E-01	c	9.2E+01	c >S	1.1E+02	n	4.2E+03	n	>S	
Pentachlorophenol	87-86-5	2.4E+00	c	1.8E-02	m	1.8E+00	m	4.5E+02	n	2.4E+05	n	>S		2.4E+00	c	9.2E-03	m	9.2E-01	m	2.3E+02	n	1.6E+04	n	>S	
Pentadiene, 1,3-trans-	2004-70-8	4.8E+03	n	1.3E+01	n	1.3E+03	n	2.8E+05	n	6.7E+05	n	>S		4.7E+03	n	6.5E+00	n	6.5E+02	n	1.4E+05	n	4.3E+04	n	>S	
Pentaerythritol tetranitrate (PETN)	78-11-5	2.7E+04	n	2.5E+03	n	2.5E+05	n >S							2.7E+04	n	1.2E+03	n	1.2E+05	n >S						
Pentane	109-66-0	4.9E+03	n	4.0E+03	n	4.0E+05	n >S	5.4E+03	n	1.2E+03	n	<GW Ing		2.6E+03	n	2.0E+03	n	2.0E+05	n >S	2.8E+03	n	7.6E+01	n	<GW Ing	
Pentane, 2-methyl-	107-83-5	4.8E+03	n	3.8E+02	n	3.8E+04	n >S	2.8E+05	n	4.5E+05	n	>S		4.7E+03	n	1.9E+02	n	1.9E+04	n >S	1.4E+05	n	2.9E+04	n	>S	
Pentane, 3-methyl-	96-14-0	4.8E+03	n	3.1E+02	n	3.1E+04	n >S	2.8E+05	n	4.7E+05	n	>S		4.7E+03	n	1.6E+02	n	1.6E+04	n >S	1.4E+05	n	3.1E+04	n	>S	
Pentanediol, 1,5-	111-29-5	3.0E+05	n	2.4E+02	n	2.4E+04	n	1.0E+06	n	1.0E+06	n	>S		2.7E+05	n	1.2E+02	n	1.2E+04	n	1.0E+06	n	1.0E+06	n	>S	
Pentanol, 1-	71-41-0	2.6E+03	n	2.3E+00	n	2.3E+02	n	6.0E+04	n	1.0E+06	n	>S		2.5E+03	n	1.1E+00	n	1.1E+02	n	3.1E+04	n	2.9E+05	n	>S	
Pentanol, 4-methyl-2-	108-11-2	1.5E+03	n	1.8E+00	n	1.8E+02	n	5.5E+03	n	3.6E+05	n	>S		1.2E+03	n	8.8E-01	n	8.8E+01	n	2.9E+03	n	2.3E+04	n	>S	
Pentanone, 2-	107-87-9	2.6E+03	n	2.2E+00	n	2.2E+02	n	1.2E+04	n	5.0E+05	n	>S		2.2E+03	n	1.1E+00	n	1.1E+02	n	6.4E+03	n	3.3E+04	n		
Pentyne, 1-	627-19-0	4.8E+03	n	1.3E+01	n	1.3E+03	n	2.8E+05	n	6.2E+05	n	>S		4.7E+03	n	6.3E+00	n	6.3E+02	n	1.4E+05	n	4.0E+04	n	>S	
Perchlorate	14797-73-0	5.1E+01	n	1.4E-01	n	1.4E+01	n							5.1E+01	n	7.0E-02	n	7.0E+00	n						
Perylene	198-55-0	1.3E+03	n	7.6E+04	n >S	1.0E+06	n >S							1.3E+03	n	3.8E+04	n >S	1.0E+06	n >S						
Phenacetin	62-44-2	1.8E+03	c	1.2E+00	c	1.2E+02	c	1.1E+04	c	1.0E+06	c	>S		1.5E+03	c	6.2E-01	c	6.2E+01	c	5.6E+03	c	2.3E+05	c	>S	
Phenanthrene	85-01-8	1.7E+03	n	4.2E+02	n	4.2E+04	n >S							1.7E+03	n	2.1E+02	n	2.1E+04	n >S						
Phenanthridine	229-87-8	2.0E+02	n	5.3E+00	n	5.3E+02	n							2.0E+02	n	2.6E+00	n	2.6E+02	n						
Phenol	108-95-2	2.9E+03	n	1.9E+01	n	1.9E+03	n	3.4E+03	n	7.2E+05	n	>S		1.6E+03	n	9.6E+00	n	9.6E+02	n	1.7E+03	n	4.7E+04	n		
Phenol, 4-tert-butyl-	98-54-4	3.2E+02	n	4.5E+00	n	4.5E+02	n	9.1E+03	n	1.0E+06	n	>S		3.1E+02	n	2.3E+00	n	2.3E+02	n	4.7E+03	n	3.1E+05	n	>S	
Phenothiazine	92-84-2	6.3E+01	n	8.0E+00	n >S	8.0E+02	n >S	2.1E+04	n	1.0E+06	n	>S		6.2E+01	n	4.0E+00	n >S	4.0E+02	n >S	1.1E+04	n	1.0E+06	n	>S	
Phenyl mercuric acetate	62-38-4	5.3E+00	n	1.6E-02	n	1.6E+00	n							5.3E+00	n	8.1E-03	n	8.1E-01	n						
Phenylene diamine, m-	108-45-2	1.3E+01	n	2.9E-01	n	2.9E+01	n	1.4E+01	n	4.0E+03	n			7.0E+00	n	1.4E-01	n	1.4E+01	n	7.2E+00	n	2.6E+02	n		

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3		$^{GW}Soil_{Class3}$ (mg/kg)	note3		$AirSoil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3		GWSoil fo Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3		$^{GW}Soil_{Class3}$ (mg/kg)	note3		$AirSoil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3		GWSoil fo Secondary MCL (mg/kg)
Phenylene diamine, p-	106-50-3	1.5E+01	n	9.1E+00	n		9.1E+02	n		1.5E+01	n	4.5E+03	n			7.6E+00	n	4.6E+00	n		4.6E+02	n		7.6E+00	n	2.9E+02	n		
Phorate	298-02-2	1.0E+01	n	1.1E+00	n		1.1E+02	n		4.4E+01	n	2.2E+04	n	>S		8.4E+00	n	5.4E-01	n		5.4E+01	n		2.3E+01	n	1.4E+03	n		
Phosalone	2310-17-0	1.3E+02	n	2.3E+00	n		2.3E+02	n								1.3E+02	n	1.2E+00	n		1.2E+02	n							
Phosdrin (mevinphos)	7786-34-7	1.7E+00	n	1.2E-03	n		1.2E-01	n								1.7E+00	n	5.9E-04	n		5.9E-02	n							
Phosmet	732-11-6	6.8E+02	n	4.1E+00	n		4.1E+02	n		1.4E+03	n	6.4E+05	n	>S		4.6E+02	n	2.0E+00	n		2.0E+02	n		7.1E+02	n	4.1E+04	n	>S	
Phosphine	7803-51-2	3.8E+00	n		n			n		4.6E+00	n		n	<GW Ing		2.1E+00	n		n			n		2.4E+00	n		n	<GW Ing	
Phosphorotrithioic acid, S,S,S-tributyl ester	78-48-8	6.6E+01	c	4.3E+02	c	>S	4.3E+04	c	>S							6.6E+01	c	2.2E+02	c	>S	2.2E+04	c	>S						
Phosphorus, total*	7723-14-0																												
Phosphorus, white	7723-14-0	7.5E-01	n	2.3E-02	n		2.3E+00	n		1.5E+00	n					5.1E-01	n	1.1E-02	n		1.1E+00	n		7.9E-01	n				
Phthalic anhydride	85-44-9	3.6E+04	n	2.5E+02	n		2.5E+04	n		5.0E+04	n	1.0E+06	n	>S		2.1E+04	n	1.2E+02	n		1.2E+04	n		2.6E+04	n	1.0E+06	n	>S	
Picloram	1918-02-1	4.7E+03	n	9.8E-01	m		9.8E+01	m								4.7E+03	n	4.9E-01	m		4.9E+01	m							
Picoline, 2- (2-methylpyridine)	109-06-8	1.7E+01	n	5.6E-01	n		5.6E+01	n		1.7E+01	n	1.2E+03	n			8.7E+00	n	2.8E-01	n		2.8E+01	n		8.8E+00	n	8.0E+01	n		
Polybrominated biphenyls (PBBs)	67774-32-7	9.7E-03	c	9.0E-03	c		9.0E-01	c								9.7E-03	c	4.5E-03	c		4.5E-01	c							
Polychlorinated biphenyls (PCBs)	1336-36-3	1.1E+00	n	1.1E+01	m		1.1E+03	m		5.4E+01	c	6.2E+04	c	>S		1.1E+00	n	5.3E+00	m		5.3E+02	m		2.8E+01	c	4.0E+03	c	>S	
Potassium*	7440--09-27																												
Primene	68955-53-3	3.0E+02	n	5.4E+01	n		5.4E+03	n		1.8E+03	n	3.1E+05	n	>S		2.6E+02	n	2.7E+01	n		2.7E+03	n		9.5E+02	n	2.0E+04	n	>S	
Prometon (pramitol)	1610-18-0	1.0E+03	n	9.6E+00	n		9.6E+02	n								1.0E+03	n	4.8E+00	n		4.8E+02	n							
Pronamide	23950-58-5	5.0E+03	n	1.8E+01	n		1.8E+03	n	>S							5.0E+03	n	9.1E+00	n		9.1E+02	n	>S						
Propanal (propionaldehyde)	123-38-6	1.0E+02	n	3.9E-01	n		3.9E+01	n		1.2E+02	n	3.3E+03	n			5.8E+01	n	2.0E-01	n		2.0E+01	n		6.3E+01	n	2.1E+02	n		
Propane, 1-bromo-	106-94-5	6.1E+02	n	3.4E+00	n		3.4E+02	n		7.7E+02	n	4.5E+03	n			3.5E+02	n	1.7E+00	n		1.7E+02	n		3.9E+02	n	2.9E+02	n		
Propanil	709-98-8	3.3E+02	n	4.7E+00	n		4.7E+02	n								3.3E+02	n	2.3E+00	n		2.3E+02	n							
Propanoic acid (propionic acid)	79-09-4	1.1E+02	n	2.3E+01	n		2.3E+03	n		1.1E+02	n	2.8E+04	n			5.8E+01	n	1.2E+01	n		1.2E+03	n		5.8E+01	n	1.8E+03	n		
Propanol, 1-	71-23-8	9.4E+03	n	1.0E+01	n		1.0E+03	n		2.2E+04	n	1.0E+06	n	>S		6.7E+03	n	5.0E+00	n		5.0E+02	n		1.1E+04	n	1.1E+05	n		
Propargite	2312-35-8	1.3E+03	n	1.1E+02	n		1.1E+04	n	>S							1.3E+03	n	5.5E+01	n		5.5E+03	n	>S						
Propargyl alcohol	107-19-7	1.1E+02	n	1.0E-01	n		1.0E+01	n		2.9E+02	n	6.3E+04	n			7.9E+01	n	5.2E-02	n		5.2E+00	n		1.5E+02	n	4.1E+03	n		
Propazine	139-40-2	1.1E+02	c	9.5E-01	c		9.5E+01	c								1.1E+02	c	4.7E-01	c		4.7E+01	c							
Propham	122-42-9	1.3E+03	n	1.9E+00	n		1.9E+02	n								1.3E+03	n	9.7E-01	n		9.7E+01	n							
Propionitrile (propane nitrile)	107-12-0	2.9E+01	n	1.9E-02	n		1.9E+00	n		2.7E+02	n	1.5E+04	n			2.7E+01	n	9.7E-03	n		9.7E-01	n		1.4E+02	n	9.8E+02	n		
Propyl acetate, n-	109-60-4	7.4E+03	n	5.3E+00	n		5.3E+02	n								7.4E+03	n	2.7E+00	n		2.7E+02	n							
Propylbenzene, n-	103-65-1	2.2E+03	n	4.5E+01	n		4.5E+03	n	>S	6.3E+03	n	2.8E+05	n	>S		1.6E+03	n	2.2E+01	n		2.2E+03	n	>S	3.3E+03	n	1.8E+04	n	>S	
Propylene glycol	57-55-6	1.9E+04	n	9.4E+02	n		9.4E+04	n		1.9E+04	n	1.0E+06	n	>S		9.9E+03	n	4.7E+02	n		4.7E+04	n		1.0E+04	n	3.3E+05	n	>S	
Propylene glycol monomethyl ether	107-98-2	4.6E+04	n	3.3E+01	n		3.3E+03	n		2.3E+05	n	1.0E+06	n	>S		3.9E+04	n	1.7E+01	n		1.7E+03	n		1.2E+05	n	1.0E+06	n	>S	
Propylene oxide	75-56-9	2.0E+01	c	7.5E-03	c		7.5E-01	c		9.7E+01	c	3.1E+03	c			1.7E+01	c	3.8E-03	c		3.8E-01	c		5.0E+01	c	2.0E+02	c		
Propylene tetramer	6842-15-5	4.6E+03	n	2.5E+04	n	>S	1.0E+06	n	>S	1.5E+04	n	4.6E+05	n	>S		3.6E+03	n	1.3E+04	n	>S	1.0E+06	n	>S	7.9E+03	n	2.9E+04	n	>S	
Prothiofos (Tokuthion)	34643-46-4	6.6E+00	n	2.4E+03	n		2.4E+05	n	>S	8.1E+04	n	1.0E+06	n	>S		6.6E+00	n	1.2E+03	n		1.2E+05	n	>S	4.1E+04	n	1.0E+06	n	>S	
Pyrene	129-00-0	1.7E+03	n	1.1E+03	n	>S	1.1E+05	n	>S							1.7E+03	n	5.6E+02	n	>S	5.6E+04	n	>S						
Pyridine	110-86-1	6.0E+01	n	6.9E-02	n		6.9E+00	n		2.3E+02	n	6.3E+02	n			4.8E+01	n	3.5E-02	n		3.5E+00	n		1.2E+02	n	4.1E+01	n		
Quinoline	91-22-5	1.6E+00	c	7.5E-03	c		7.5E-01	c		3.0E+02	n	1.1E+05	n			1.6E+00	c	3.8E-03	c		3.8E-01	c		1.6E+02	n	6.9E+03	n		
Ronnel	299-84-3	2.3E+03	n	4.2E+02	n		4.2E+04	n	>S							2.3E+03	n	2.1E+02	n		2.1E+04	n	>S						
Safrole	94-59-7	1.6E+01	c	1.6E-01	c		1.6E+01	c		6.7E+01	c	7.5E+03	c	>S		1.3E+01	c	8.2E-02	c		8.2E+00	c		3.4E+01	c	4.8E+02	c		
Selenium	7782-49-2	3.1E+02	n	2.3E+00	m	>S	2.3E+02	m	>S							3.1E+02	n	1.1E+00	m	>S	1.1E+02	m	>S						
Selenourea	630-10-4	4.1E+02	n		n			n								4.1E+02	n		n			n							
Silver	7440-22-4	9.6E+01	n	4.8E-01	n	>S	4.8E+01	n	>S						3.9E-01	9.5E+01	n	2.4E-01	n	>S	2.4E+01	n	>S						2.0E-01
Simazine	122-34-9	3.9E+01	c	5.5E-02	m		5.5E+00	m								3.9E+01	c	2.8E-02	m		2.8E+00	m							
Sodium*	7440-23-5																												
Sodium diethyldithiocarbamate	148-18-5	2.2E+01	c		c			c								2.2E+01	c		c			c							
Sodium hypochlorite	7681-52-9	1.5E+04	n		n			n								1.5E+04	n		n			n							

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3		$^{GW}Soil_{Class3}$ (mg/kg)	note3		$AirSoil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3		GWSoil fo Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3		$^{GW}Soil_{Class3}$ (mg/kg)	note3		$AirSoil_{Inh-V}$[4] (mg/kg)	ote	AirGW-$Soil_{Inh-V}$ (mg/kg)	note3		GWSoil fo Secondary MCL (mg/kg)
Sodium polyacrylate	9003-04-7	1.2E+02	n	2.4E+01	n		2.4E+03	n		1.2E+02	n	3.0E+04	n			6.2E+01	n	1.2E+01	n		1.2E+03	n		6.2E+01	n	1.9E+03	n		
Strontium	7440-24-6	4.4E+04	n	6.1E+02	n		6.1E+04	n								4.4E+04	n	3.1E+02	n		3.1E+04	n							
Strychnine	57-24-9	2.0E+01	n	3.7E-02	n		3.7E+00	n								2.0E+01	n	1.9E-02	n		1.9E+00	n							
Styrene	100-42-5	6.7E+03	n	3.3E+00	m		3.3E+02	m		1.1E+04	n	4.9E+05	n	>S		4.3E+03	n	1.6E+00	m		1.6E+02	m		5.8E+03	n	3.2E+04	n	>S	
Sulfate*	14808-79-8																												
Sulfide*	18496-25-8																												
Sulfolane	126-33-0	1.3E+00	n	9.4E-04	n		9.4E-02	n								1.3E+00	n	4.7E-04	n		4.7E-02	n							
Sulfur*	7704-34-9																												
Sulprofos (Bolstar)	35400-43-2	1.9E+02	n	7.5E+03	n	>S	7.5E+05	n	>S	7.1E+04	n	1.0E+06	n	>S		1.9E+02	n	3.8E+03	n	>S	3.8E+05	n	>S	3.6E+04	n	1.0E+06	n	>S	
TCDD, 2,3,7,8- (dioxin)	1746-01-6	1.0E-03	n	1.7E-02	m		1.7E+00	m								1.0E-03	n	8.5E-03	m		8.5E-01	m							
Tebuconazole	107534-96-3	2.0E+03	n	3.1E+01	n		3.1E+03	n	>S							2.0E+03	n	1.6E+01	n		1.6E+03	n	>S						
Tebuthiuron	34014-18-1	4.7E+03	n	5.4E+00	n		5.4E+02	n								4.7E+03	n	2.7E+00	n		2.7E+02	n							
Terbufos	13071-79-9	1.7E+00	n	3.4E-01	n		3.4E+01	n								1.7E+00	n	1.7E-01	n		1.7E+01	n							
Tert-amyl ethyl ether (TAEE)	919-94-8	8.9E+02	n	9.5E+00	n		9.5E+02	n		1.2E+03	n	1.4E+04	n	>S		5.3E+02	n	4.7E+00	n		4.7E+02	n		6.3E+02	n	9.2E+02	n		
Tert-amyl-methyl ether (TAME)	994-05-8	8.9E+02	n	3.8E+00	n		3.8E+02	n		1.2E+03	n	9.8E+03	n			5.3E+02	n	1.9E+00	n		1.9E+02	n		6.3E+02	n	6.3E+02	n		
Tert-butyl alcohol (2-methyl-2-propanol)	75-65-0	4.7E+03	n	4.6E+00	n		4.6E+02	n		1.3E+04	n	1.0E+06	n	>S		3.5E+03	n	2.3E+00	n		2.3E+02	n		6.8E+03	n	6.8E+04	n		
Tetrachlorobenzene, 1,2,3,4-	634-66-2	2.0E+01	n	1.2E+01	n		1.2E+03	n		1.3E+05	n	1.0E+06	n	>S		2.0E+01	n	6.0E+00	n		6.0E+02	n		6.8E+04	n	1.0E+06	n	>S	
Tetrachlorobenzene, 1,2,3,5-	634-90-2	1.3E+01	n	1.9E+00	n		1.9E+02	n		5.8E+04	n	1.0E+06	n	>S		1.3E+01	n	9.4E-01	n		9.4E+01	n		3.0E+04	n	5.5E+05	n	>S	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	2.0E+01	n	4.8E-01	n		4.8E+01	n	>S	3.4E+04	n	1.0E+06	n	>S		2.0E+01	n	2.4E-01	n		2.4E+01	n	>S	1.7E+04	n	1.6E+05	n	>S	
Tetrachloroethane, 1,1,1,2-	630-20-6	6.5E+01	c	1.4E+00	c		1.4E+02	c		9.1E+01	c	4.5E+03	c			3.9E+01	c	7.1E-01	c		7.1E+01	c		4.7E+01	c	2.9E+02	c		
Tetrachloroethane, 1,1,2,2-	79-34-5	6.9E+00	c	2.3E-02	c		2.3E+00	c		8.9E+00	c	2.2E+02	c			4.0E+00	c	1.2E-02	c		1.2E+00	c		4.6E+00	c	1.4E+01	c		
Tetrachloroethylene	127-18-4	1.0E+02	c	5.0E-02	m		5.0E+00	m		9.4E+02	c	5.0E+03	c	>S		9.4E+01	c	2.5E-02	m		2.5E+00	m		4.8E+02	c	3.2E+02	c		
Tetrachlorophenol, 2,3,4,5-	4901-51-3	3.8E+02	n	1.5E+01	n		1.5E+03	n		6.7E+03	n	1.0E+06	n	>S		3.6E+02	n	7.4E+00	n		7.4E+02	n		3.5E+03	n	2.5E+05	n	>S	
Tetrachlorophenol, 2,3,4,6-	58-90-2	1.7E+02	n	4.5E+00	n		4.5E+02	n		2.0E+03	n	4.2E+05	n	>S		1.6E+02	n	2.2E+00	n		2.2E+02	n		1.0E+03	n	2.7E+04	n	>S	
Tetrachlorophenol, 2,3,5,6-	935-95-5	2.1E+01	n	2.2E+00	n		2.2E+02	n	>S	1.8E+02	n	6.0E+03	n	>S		1.9E+01	n	1.1E+00	n		1.1E+02	n	>S	9.4E+01	n	3.9E+02	n	>S	
Tetrachlorvinphos (Stirophos)	22248-79-9	2.6E+03	n	2.4E+03	n		2.4E+05	n	>S	1.3E+05	n	1.0E+06	n	>S		2.5E+03	n	1.2E+03	n		1.2E+05	n	>S	6.9E+04	n	1.0E+06	n	>S	
Tetradifon	116-29-0	1.0E+03	n	8.7E+01	n		8.7E+03	n	>S							1.0E+03	n	4.4E+01	n		4.4E+03	n	>S						
Tetraethyl dithiopyrophosphate (sulfotep)	3689-24-5	2.8E+01	n	3.9E-01	n		3.9E+01	n		1.9E+02	n	1.1E+05	n	>S		2.5E+01	n	1.9E-01	n		1.9E+01	n		1.0E+02	n	7.0E+03	n	>S	
Tetraethyl lead	78-00-2	6.6E-03	n	5.0E-04	n		5.0E-02	n		2.0E+00	n	1.6E+02	n			6.6E-03	n	2.5E-04	n		2.5E-02	n		1.0E+00	n	1.0E+01	n		
Tetraethyl pyrophosphate (TEPP)	107-49-3	7.3E-01	n	9.3E-03	n		9.3E-01	n		8.0E+01	n	7.4E+04	n			7.2E-01	n	4.6E-03	n		4.6E-01	n		4.1E+01	n	4.8E+03	n		
Tetraethylene glycol	112-60-7	1.6E+03	n	1.6E+01	n		1.6E+03	n		1.8E+03	n	1.0E+06	n	>S		8.8E+02	n	7.8E+00	n		7.8E+02	n		9.1E+02	n	1.0E+06	n	>S	
Tetrahydrofuran	109-99-9	1.5E+02	c	2.5E-01	c		2.5E+01	c		1.9E+02	c	4.6E+03	c			8.6E+01	c	1.2E-01	c		1.2E+01	c		9.7E+01	c	3.0E+02	c		
Tetrahydropyran	142-68-7	1.6E+02	c	2.7E-01	c		2.7E+01	c		2.0E+02	c	5.9E+03	c			9.2E+01	c	1.4E-01	c		1.4E+01	c		1.0E+02	c	3.8E+02	c		
Tetraoxadodecane, 2,5,8,11-	112-49-2	1.7E+03	n	1.7E+00	n		1.7E+02	n		9.1E+03	n	1.0E+06	n	>S		1.4E+03	n	8.6E-01	n		8.6E+01	n		4.7E+03	n	2.0E+05	n		
Thallium and compounds (as thallium chloride)	7791-12-0	6.3E+00	n	1.7E+00	m		1.7E+02	m								6.3E+00	n	8.7E-01	m		8.7E+01	m							
Thiofanox	39196-18-4	1.9E+01	n	3.1E-02	n		3.1E+00	n		3.2E+02	n	1.1E+05	n	>S		1.8E+01	n	1.6E-02	n		1.6E+00	n		1.6E+02	n	6.8E+03	n		
Thionazin	297-97-2	4.7E+00	n	1.1E-02	n		1.1E+00	n								4.7E+00	n	5.5E-03	n		5.5E-01	n							
Thiophanate-methyl	23564-05-8	5.3E+03	n	4.5E+00	n		4.5E+02	n	>S							5.3E+03	n	2.2E+00	n		2.2E+02	n	>S						
Thiram	137-26-8	2.6E+02	n	3.5E+00	n		3.5E+02	n		1.3E+03	n	9.1E+05	n	>S		2.2E+02	n	1.8E+00	n		1.8E+02	n		6.5E+02	n	5.9E+04	n	>S	
Tin	7440-31-5	3.5E+04	n	3.7E+04	n	>S	1.0E+06	n	>S							3.5E+04	n	1.8E+04	n	>S	1.0E+06	n	>S						
Titanium	7440-32-6	1.0E+06	n		n	>S		n	>S							1.0E+06	n		n	>S		n	>S						
Toluene	108-88-3	5.9E+03	n	8.2E+00	m		8.2E+02	m		6.3E+04	n	5.2E+05	n	>S		5.4E+03	n	4.1E+00	m		4.1E+02	m		3.2E+04	n	3.4E+04	n	>S	
Toluene diisocyanate, 2,4/2,6-	26471-62-5	1.5E+02	n							1.5E+02	n	1.7E+05	n			7.5E+01	n							7.5E+01	n	1.1E+04	n		
Toluenediamine, 2,4-	95-80-7	1.5E+00	c	1.5E-02	c		1.5E+00	c		7.8E+03	n	1.0E+06	n	>S		1.5E+00	c	7.6E-03	c		7.6E-01	c		4.0E+03	n	4.4E+05	n	>S	
Toluenediamine, 2,6-	823-40-5	2.0E+03	n	1.4E+00	n		1.4E+02	n								2.0E+03	n	7.2E-01	n		7.2E+01	n							
Toluidine, o-	95-53-4	1.7E+01	c	3.8E-02	c		3.8E+00	c		1.4E+02	c	2.7E+04	c			1.5E+01	c	1.9E-02	c		1.9E+00	c		7.1E+01	c	1.7E+03	c		
Toluidine, p-	106-49-0	2.5E+01	c	1.4E-02	c		1.4E+00	c								2.5E+01	c	7.0E-03	c		7.0E-01	c							

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area																30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	MCL (mg/kg)	GWSoil fo Secondary	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh-V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh-V}$ (mg/kg)	note3	MCL (mg/kg)	GWSoil fo Secondary
Toxaphene	8001-35-2	1.2E+00	c	1.2E+01	m	1.2E+03	m	9.6E+02	c	1.0E+06	c	>S		1.2E+00	c	5.8E+00	m	5.8E+02	m	4.9E+02	c	4.4E+05	c	>S	
TPH, TX1005, C6-C12	TPH-1005-1	1.6E+03	n	6.5E+01	n	6.5E+03	n	>S 3.1E+03	n	1.2E+05	n	>S		1.1E+03	n	3.3E+01	n	3.3E+03	n	>S 1.6E+03	n	7.6E+03	n	>S	
TPH, TX1005, >C12-C28	TPH-1005-2	2.3E+03	n	2.0E+02	n	2.0E+04	n	>S 1.5E+04	n	1.0E+06	n	>S		2.0E+03	n	9.9E+01	n	9.9E+03	n	>S 7.8E+03	n	9.8E+04	n	>S	
TPH, TX1005, >C12-C35	TPH-1005-3	2.3E+03	n	2.0E+02	n	2.0E+04	n	>S 1.5E+04	n	1.0E+06	n	>S		2.0E+03	n	9.9E+01	n	9.9E+03	n	>S 7.8E+03	n	9.8E+04	n	>S	
TPH, TX1005, >C28-C35	TPH-1005-4	2.3E+03	n	2.0E+02	n	2.0E+04	n	>S 1.5E+04	n	1.0E+06	n	>S		2.0E+03	n	9.9E+01	n	9.9E+03	n	>S 7.8E+03	n	9.8E+04	n	>S	
TP Silvex, 2,4,5-	93-72-1	5.2E+02	n	5.3E+00	m	5.3E+02	m	2.6E+04	n	1.0E+06	n	>S		5.1E+02	n	2.6E+00	m	2.6E+02	m	1.3E+04	n	1.0E+06	n	>S	
Trialdemenol	55219-65-3	2.0E+03	n	8.4E+00	n	8.4E+02	n							2.0E+03	n	4.2E+00	n	4.2E+02	n						
Triallate	2303-17-5	3.2E+02	n	1.9E+01	n	1.9E+03	n	>S						3.2E+02	n	9.5E+00	n	9.5E+02	n	>S					
Triaminotrinitrobenzene (TATB)	3058-38-6	1.3E+02	n	6.4E-02	c	6.4E+00	c	3.8E+02	n	8.9E+05	n	>S		9.9E+01	n	3.2E-02	c	3.2E+00	c	2.0E+02	n	3.9E+05	n	>S	
Tributyltin oxide	56-35-9	7.4E-01	n		n		n	7.7E-01	n					3.9E-01	n		n		n	3.9E-01	n				
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	3.9E+05	n	8.0E+04	n	>S 1.0E+06	n	>S 4.6E+05	n	1.0E+06	n	>S		2.2E+05	n	4.0E+04	n	>S 1.0E+06	n	>S 2.4E+05	n	6.5E+04	n	>S	
Trichlorobenzene, 1,2,3-	87-61-6	1.9E+02	n	2.6E+01	n	2.6E+03	n	6.0E+03	n	9.6E+05	n	>S		1.9E+02	n	1.3E+01	n	1.3E+03	n	3.1E+03	n	6.2E+04	n	>S	
Trichlorobenzene, 1,2,4-	120-82-1	6.4E+02	n	4.8E+00	m	4.8E+02	m	1.5E+04	n	1.0E+06	n	>S		6.1E+02	n	2.4E+00	m	2.4E+02	m	7.8E+03	n	6.9E+04	n	>S	
Trichlorobenzene, 1,3,5-	108-70-3	1.9E+02	n	7.5E+00	n	7.5E+02	n	2.5E+03	n	2.1E+05	n	>S		1.7E+02	n	3.7E+00	n	3.7E+02	n	1.3E+03	n	1.3E+04	n	>S	
Trichloroethane, 1,1,1-	71-55-6	5.2E+04	n	1.6E+00	m	1.6E+02	m	7.7E+04	n	3.2E+05	n	>S		3.2E+04	n	8.1E-01	m	8.1E+01	m	3.9E+04	n	2.1E+04	n	>S	
Trichloroethane, 1,1,2-	79-00-5	1.8E+01	c	2.0E-02	m	2.0E+00	m	2.2E+01	c	3.2E+02	c			1.0E+01	c	1.0E-02	m	1.0E+00	m	1.2E+01	c	2.1E+01	c		
Trichloroethylene	79-01-6	1.2E+02	n	3.4E-02	m	3.4E+00	m	1.5E+02	n	8.0E+02	n			6.8E+01	n	1.7E-02	m	1.7E+00	m	7.9E+01	n	5.1E+01	n		
Trichlorofluoromethane	75-69-4	1.6E+04	n	1.3E+02	n	1.3E+04	n	4.3E+04	n	7.1E+04	n	>S		1.2E+04	n	6.4E+01	n	6.4E+03	n	2.2E+04	n	4.6E+03	n		
Trichloronate	327-98-0	1.4E+02	n	1.2E+02	n	1.2E+04	n	>S						1.4E+02	n	6.2E+01	n	6.2E+03	n	>S					
Trichlorophenol, 2,3,4-	15950-66-0	5.8E+03	n	5.9E+01	n	5.9E+03	n	4.4E+04	n	1.0E+06	n	>S		5.2E+03	n	3.0E+01	n	3.0E+03	n	2.3E+04	n	1.0E+06	n	>S	
Trichlorophenol, 2,3,5-	933-78-8	5.4E+03	n	2.8E+01	n	2.8E+03	n	2.9E+04	n	1.0E+06	n	>S		4.6E+03	n	1.4E+01	n	1.4E+03	n	1.5E+04	n	7.9E+05	n	>S	
Trichlorophenol, 2,3,6-	933-75-5	4.3E+02	n	2.9E+01	n	2.9E+03	n	>S 2.4E+03	n	9.8E+04	n	>S		3.7E+02	n	1.4E+01	n	1.4E+03	n	>S 1.2E+03	n	6.4E+03	n	>S	
Trichlorophenol, 2,4,5-	95-95-4	5.1E+03	n	3.4E+01	n	3.4E+03	n	2.1E+04	n	1.0E+06	n	>S		4.1E+03	n	1.7E+01	n	1.7E+03	n	1.1E+04	n	4.1E+05	n	>S	
Trichlorophenol, 2,4,6-	88-06-2	6.7E+01	n	1.7E-01	n	1.7E+01	n	2.0E+03	c	3.5E+05	c	>S		6.7E+01	n	8.7E-02	n	8.7E+00	n	1.0E+03	c	2.3E+04	c	>S	
Trichlorophenol, 3,4,5-	609-19-8	6.3E+03	n	3.3E+02	n	3.3E+04	n	1.1E+05	n	1.0E+06	n	>S		6.0E+03	n	1.6E+02	n	1.6E+04	n	5.7E+04	n	1.0E+06	n	>S	
Trichlorophenoxyacetic acid, 2,4,5-	93-76-5	5.6E+02	n	9.9E-01	n	9.9E+01	n	3.5E+03	n	1.0E+06	n	>S		4.8E+02	n	4.9E-01	n	4.9E+01	n	1.8E+03	n	6.6E+04	n	>S	
Trichloropropane, 1,1,2-	598-77-6	2.8E+02	n	1.5E+00	n	1.5E+02	n	9.2E+02	n	6.4E+03	n	>S		2.2E+02	n	7.3E-01	n	7.3E+01	n	4.7E+02	n	4.1E+02	n	>S	
Trichloropropane, 1,2,3-	96-18-4	8.7E-01	c	2.3E-03	c	2.3E-01	c	2.8E+03	n	1.1E+05	n	>S		8.7E-01	c	1.1E-03	c	1.1E-01	c	1.4E+03	n	7.3E+03	n		
Triethanolamine	102-71-6	7.3E+02	n	9.4E+00	n	9.4E+02	n	7.7E+02	n	1.0E+06	n			3.8E+02	n	4.7E+00	n	4.7E+02	n	4.0E+02	n	1.0E+06	n		
Triethylamine	121-44-8	1.1E+02	n					1.1E+02	n	1.6E+03	n			5.5E+01	n					5.5E+01	n	1.0E+02	n		
Triethylene glycol	112-27-6	2.0E+05	n	1.4E+02	n	1.4E+04	n							2.0E+05	n	7.0E+01	n	7.0E+03	n						
Triethylphosphorothioate, O, O, O-	126-68-1	5.5E-01	n	4.4E-03	n	4.4E-01	n							5.5E-01	n	2.2E-03	n	2.2E-01	n						
Trifluralin	1582-09-8	2.7E+02	c	6.5E+01	c	6.5E+03	c	>S 1.6E+04	n	1.0E+06	n	>S		2.7E+02	c	3.3E+01	c	3.3E+03	c	>S 8.3E+03	n	9.4E+05	n	>S	
Trimethylamine	75-50-3	1.5E+02	n					1.5E+02	n	4.4E+03	n			7.6E+01	n					7.6E+01	n	2.8E+02	n		
Trimethylbenzene, 1,2,3-	526-73-8	1.2E+02	n	3.2E+01	n	3.2E+03	n	>S 1.2E+02	n	4.9E+03	n	>S		6.1E+01	n	1.6E+01	n	1.6E+03	n	>S 6.2E+01	n	3.1E+02	n		
Trimethylbenzene, 1,2,4-	95-63-6	1.3E+02	n	9.7E+00	n	9.7E+02	n	1.6E+02	n	7.5E+03	n	>S		7.3E+01	n	4.9E+00	n	4.9E+02	n	8.1E+01	n	4.9E+02	n		
Trimethylbenzene, 1,3,5-	108-67-8	1.1E+02	n	5.3E+01	n	5.3E+03	n	>S 1.2E+02	n	5.5E+03	n	>S		5.9E+01	n	2.7E+01	n	2.7E+03	n	>S 6.0E+01	n	3.5E+02	n		
Trinitrobenzene, 1,3,5-	99-35-4	2.0E+03	n	1.8E+00	n	1.8E+02	n							2.0E+03	n	9.1E-01	n	9.1E+01	n						
Trinitrophenylmethylnitramine (tetryl; nitramine)	479-45-8	5.9E+01	n	1.1E+00	n	1.1E+02	n	7.6E+01	n	5.0E+04	n	>S		3.4E+01	n	5.5E-01	n	5.5E+01	n	3.9E+01	n	9.4E+03	n	>S	
Trinitrotoluene, 2,4,6-	118-96-7	2.3E+01	n	1.7E-01	n	1.7E+01	n	7.2E+01	n	3.1E+04	n	>S		1.7E+01	n	8.6E-02	n	8.6E+00	n	3.7E+01	n	2.0E+03	n	>S	
Uranium (soluble salts)	7440-61-1	2.2E+02	n	1.8E+03	m	>S 1.8E+05	m	>S						2.2E+02	n	8.9E+02	m	>S 8.9E+04	m	>S					
Valeric acid (pentanoic acid)	109-52-4	1.3E+02	n	2.3E+01	n	>S 2.3E+03	n	>S 1.3E+02	n	3.8E+04	n	>S		6.8E+01	n	1.2E+01	n	>S 1.2E+03	n	>S 6.8E+01	n	2.5E+03	n	>S	
Vanadium	7440-62-2	2.9E+02	n	3.4E+03	n	>S 3.4E+05	n	>S						2.9E+02	n	1.7E+03	n	>S 1.7E+05	n	>S					
Vernam	1929-77-7	6.7E+01	n	2.7E+00	n	2.7E+02	n							6.7E+01	n	1.4E+00	n	1.4E+02	n						
Vinyl acetate	108-05-4	3.0E+03	n	5.3E+01	n	5.3E+03	n	3.1E+03	n	3.1E+04	n			1.5E+03	n	2.7E+01	n	2.7E+03	n	1.6E+03	n	2.0E+03	n		
Vinyl chloride	75-01-4	3.7E+00	c	2.2E-02	m	2.2E+00	m	4.3E+01	c	4.2E+01	c			3.4E+00	c	1.1E-02	m	1.1E+00	m	2.2E+01	c	2.7E+00	c		
Vinylcyclohexane	695-12-5	1.5E+02	n	1.4E+03	n	>S 1.4E+05	n	>S 1.5E+02	n	2.5E+03	n	>S		7.9E+01	n	7.1E+02	n	>S 7.1E+04	n	>S 7.9E+01	n	1.6E+02	n	<GW Ing	

Texas Commission on Environmental Quality - Table 1
Tier 1 Residential Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	MCL (mg/kg)	GWSoil fo Secondary	$^{Tot}Soil_{Comb}$[2] (mg/kg)	ote	$^{GW}Soil_{Ing}$ (mg/kg)	note3	$^{GW}Soil_{Class3}$ (mg/kg)	note3	$AirSoil_{Inh\text{-}V}$[4] (mg/kg)	ote	$AirGW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note3	MCL (mg/kg)	GWSoil fo Secondary
Warfarin	81-81-2	1.8E+01	n	2.8E-01	n	2.8E+01	n	1.8E+02	n	1.8E+05	n	>S		1.6E+01	n	1.4E-01	n	1.4E+01	n	9.1E+01	n	1.2E+04	n	>S	
Xylene, m-	108-38-3	8.9E+03	n	1.1E+02	m	1.1E+04	m >S	9.4E+03	n	1.1E+05	n	>S		4.7E+03	n	5.3E+01	m	5.3E+03	m >S	4.8E+03	n	7.2E+03	n	>S	
Xylene, o-	95-47-6	4.8E+04	n	7.1E+01	m	7.1E+03	m >S	6.8E+04	n	1.0E+06	n	>S		2.9E+04	n	3.5E+01	m	3.5E+03	m >S	3.5E+04	n	3.5E+05	n	>S	
Xylene, p-	106-42-3	8.9E+03	n	1.5E+02	m	1.5E+04	m >S	9.4E+03	n	1.4E+05	n	>S		4.7E+03	n	7.5E+01	m	7.5E+03	m >S	4.8E+03	n	9.1E+03	n	>S	
Xylenes	1330-20-7	6.0E+03	n	1.2E+02	m	1.2E+04	m >S	9.4E+03	n	1.3E+05	n	>S		3.7E+03	n	6.1E+01	m	6.1E+03	m >S	4.8E+03	n	8.1E+03	n	>S	
Zinc	7440-66-6	9.9E+03	n	2.4E+03	n >S	2.4E+05	n >S					1.6E+03		9.9E+03	n	1.2E+03	n >S	1.2E+05	n >S						8.0E+02
6 C aliphatics (TPH)	NA	1.9E+03	n	1.7E+02	n ---	1.7E+04	n > S	3.1E+03	n	3.7E+03	n	---	---	1.2E+03	n	8.6E+01	n ---	8.6E+03	n > S	1.6E+03	n	2.4E+02	n	---	---
>6-8 C aliphatics (TPH)	NA	1.9E+03	n	4.2E+02	n ---	4.2E+04	n > S	3.1E+03	n	6.1E+03	n	> S	---	1.2E+03	n	2.1E+02	n ---	2.1E+04	n > S	1.6E+03	n	3.9E+02	n	> S	---
>8-10 C aliphatics (TPH)	NA	2.2E+03	n	3.6E+03	n > S	3.6E+05	n > S	3.1E+03	n	1.9E+04	n	> S	---	1.3E+03	n	1.8E+03	n > S	1.8E+05	n > S	1.6E+03	n	1.3E+03	n	> S	---
>10-12 C aliphatics (TPH)	NA	2.1E+03	n	2.5E+04	n > S	1.0E+06	n > S	3.1E+03	n	9.1E+04	n	> S	---	1.3E+03	n	1.3E+04	n > S	1.0E+06	n > S	1.6E+03	n	5.9E+03	n	> S	---
>12-16 C aliphatics (TPH)	NA	2.8E+03	n	4.9E+05	n > S	1.0E+06	n > S	4.8E+03	n	4.1E+05	n	> S	---	1.8E+03	n	2.5E+05	n > S	1.0E+06	n > S	2.5E+03	n	2.7E+04	n	> S	---
>16-21 C aliphatics (TPH)	NA	1.3E+05	n	1.0E+06	n > S	1.0E+06	n > S	---	---	---	---	---	---	1.3E+05	n	1.0E+06	n > S	1.0E+06	n > S	---	---	---	---	---	---
>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	NA	1.1E+05	n	1.0E+06	n > S	1.0E+06	n > S	---	---	---	---	---	---	1.1E+05	n	1.0E+06	n > S	1.0E+06	n > S	---	---	---	---	---	---
>7-8 C aromatics (TPH)	NA	4.8E+03	n	2.0E+01	n ---	2.0E+03	n ---	1.5E+04	n	1.3E+05	n	> S	---	3.7E+03	n	1.0E+01	n ---	1.0E+03	n ---	7.9E+03	n	8.2E+03	n	> S	---
>8-10 C aromatics (TPH)	NA	1.6E+03	n	6.5E+01	n ---	6.5E+03	n > S	3.1E+03	n	1.2E+05	n	> S	---	1.1E+03	n	3.3E+01	n ---	3.3E+03	n > S	1.6E+03	n	7.6E+03	n	> S	---
>10-12 C aromatics (TPH)	NA	1.9E+03	n	1.0E+02	n ---	1.0E+04	n > S	6.6E+03	n	4.4E+05	n	> S	---	1.5E+03	n	5.0E+01	n ---	5.0E+03	n > S	3.4E+03	n	2.8E+03	n	> S	---
>12-16 C aromatics (TPH)	NA	2.3E+03	n	2.0E+02	n ---	2.0E+04	n > S	1.5E+04	n	1.0E+06	n	> S	---	2.0E+03	n	9.9E+01	n ---	9.9E+03	n > S	7.8E+03	n	9.8E+03	n	> S	---
>16-21 C aromatics (TPH)	NA	1.9E+03	n	4.7E+02	n > S	4.7E+04	n > S	---	---	---	---	---	---	1.9E+03	n	2.3E+02	n > S	2.3E+04	n > S	---	---	---	---	---	---
>21-35 C aromatics (TPH)	NA	1.9E+03	n	3.7E+03	n > S	3.7E+05	n > S	---	---	---	---	---	---	1.9E+03	n	1.8E+03	n > S	1.8E+05	n > S	---	---	---	---	---	---
Transformer mineral oil	NA	2.6E+04	n	2.5E+05	n ---	1.0E+06	n ---	8.4E+04	n	1.0E+06	n	---	---	2.0E+04	n	1.3E+05	n ---	1.0E+06	n ---	4.3E+04	n	6.1E+05	n	---	---

Footnotes

[1]In accordance with §350.72(b), when establishing Tier 1 PCLs for individual COCs for each of the individual and combined human health exposure pathways, the person must evaluate whether the PCLs need to be adjusted to lower concentrations to meet the cumulative carcinogenic risk level and hazard index criteria specified in §350.72(c). For COCs which exhibit both carcinogenic and noncarcinogenic characteristics, they shall be evaluated as both a carcinogen and noncarcinogen when determining whether the PCL established for an individual COC for each of the individual and combined human health exposure pathways needs to be adjusted to a lower concentration to meet the cumulative risk and hazard criteria. The person shall then use the lower of the carcinogenic or noncarcinogenic PCL as the Tier 1 human health PCL. In other words, the Tier 1 PCLs provide in this table for an individual COC should not be used as the final Tier 1 human health PCL for any of the individual or combined exposure pathways in cases where there are more than 10 carcinogenic and/or more than 10 noncarcinogenic COCs within a source medium unless it can be demonstrated that further downward adjustment is not necessary to meet the cumulative risk and hazard criteria.

[2]Combined includes inhalation; ingestion; dermal; vegetable consumption pathways

[3]c = carcinogenic; n = noncarcinogenic; m = primary MCL-based; a = EPA Action Level-based; > S = solubility limit exceeded during calculation; < GW Ing = less than GWGWIng value

[4]For subsurface soils only

[5]Please contact the TCEQ for assistance in determining a site-specific approach for GWSoilIng values for these compounds.

[6]Note that much higher PCLs for mercury may be obtained using a pH-dependent Kd based on site-specific information (see Figure:30 TAC §350.73(e)(1)(C)).

[7]Persons must use the value provided in the "GWSoil for Secondary MCL" column of this table as the GWSoil PCL for MTBE if the conditions described in §350.74(f)(3) exist.

*These compounds, acetic acid, ammonium polyphosphate, ammonium salts, calcium, chloride, ehtylene, hydrogen chloride (hydrochloric acid), iron, limonene, d-, magnesium, phosphorus, total, potassium, sodium, sulfate, sulfide, and sulfure, are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tceq.state.tx.us/remediation/trrp/trrp.htm.

All values capped at 1E+06

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)
Acenaphthene	83-32-9	3.7E+04	n	7.1E+02	n	>S	7.1E+04	n	>S						3.7E+04	n	3.5E+02	n	>S	3.5E+04	n	>S					
Acenaphthylene	208-96-8	3.7E+04	n	1.2E+03	n	>S	1.2E+05	n	>S						3.7E+04	n	6.1E+02	n	>S	6.1E+04	n	>S					
Acetaldehyde	75-07-0	2.0E+02	n	1.5E+01	n		1.5E+03	n		2.0E+02	n	6.7E+03	n		1.0E+02	n	7.4E+00	n		7.4E+02	n		1.0E+02	n	4.3E+02	n		
Acetate, 2-ethoxyethanol	111-15-9	3.1E+03	n	2.7E+00	n		2.7E+02	n		3.8E+03	n	6.2E+05	n	>S	1.8E+03	n	1.4E+00	n		1.4E+02	n		2.0E+03	n	4.0E+04	n		
Acetate, isoamyl	123-92-2	7.1E+03	n	2.6E+01	n		2.6E+03	n		7.8E+03	n	2.0E+05	n	>S	3.8E+03	n	1.3E+01	n		1.3E+03	n		4.0E+03	n	1.3E+04	n	>S	
Acetate, isobutyl	110-19-0	8.5E+03	n	1.1E+01	n		1.1E+03	n		1.0E+04	n	2.1E+05	n	>S	4.8E+03	n	5.5E+00	n		5.5E+02	n		5.3E+03	n	1.4E+04	n	>S	
Acetate, sec-butyl	105-46-4	1.4E+04	n	1.2E+01	n		1.2E+03	n		2.0E+04	n	3.5E+05	n	>S	8.6E+03	n	5.9E+00	n		5.9E+02	n		1.1E+04	n	2.2E+04	n	>S	
Acetic acid*	64-19-7																										
Acetone (2-propanone)	67-64-1	1.6E+04	n	1.3E+02	n		1.3E+04	n		1.6E+04	n	6.9E+05	n		8.1E+03	n	6.4E+01	n		6.4E+03	n		8.2E+03	n	4.5E+04	n		
Acetone cyanohydrin	75-86-5	1.5E+03	n	4.3E-01	n		4.3E+01	n		6.1E+03	n	9.3E+05	n		1.2E+03	n	2.1E-01	n		2.1E+01	n		3.1E+03	n	6.0E+04	n		
Acetonitrile	75-05-8	1.7E+03	n	4.5E+00	n		4.5E+02	n		1.8E+03	n	8.7E+04	n		9.1E+02	n	2.3E+00	n		2.3E+02	n		9.4E+02	n	5.6E+03	n		
Acetophenone	98-86-2	6.1E+03	n	2.5E+01	n		2.5E+03	n		6.7E+03	n	6.4E+05	n	>S	3.3E+03	n	1.2E+01	n		1.2E+03	n		3.5E+03	n	4.1E+04	n	>S	
Acetylaminofluorene, 2-	53-96-3	4.3E+00	c	1.0E-02	c		1.0E+00	c		3.1E+01	c	2.0E+04	c	>S	3.8E+00	c	5.1E-03	c		5.1E-01	c		1.6E+01	c	1.7E+03	c	>S	
Acifluorfen, sodium	62476-59-9	4.5E+03	n	6.1E+00	n		6.1E+02	n		9.1E+03	n	1.0E+06	n	>S	3.1E+03	n	3.1E+00	n		3.1E+02	n		4.7E+03	n	1.0E+06	n	>S	
Acridine	260-94-6	2.0E+03	n	2.3E+01	n		2.3E+03	n							2.0E+03	n	1.1E+01	n		1.1E+03	n						
Acrolein	107-02-8	1.6E+00	n	7.1E-02	n		7.1E+00	n		1.6E+00	n	1.9E+02	n		8.1E-01	n	3.5E-02	n		3.5E+00	n		8.1E-01	n	1.2E+01	n		
Acrylamide	79-06-1	1.9E+00	c	8.7E-04	c		8.7E-02	c		3.6E+00	c	9.4E+02	c		1.3E+00	c	4.4E-04	c		4.4E-02	c		1.9E+00	c	6.2E+01	c		
Acrylic acid	79-10-7	1.7E+02	n	7.2E+01	n		7.2E+03	n		1.7E+02	n	4.1E+04	n		8.7E+01	n	3.6E+01	n		3.6E+03	n		8.7E+01	n	2.7E+03	n		
Acrylonitrile	107-13-1	7.6E+00	c	7.5E-03	c		7.5E-01	c		8.8E+00	c	1.9E+02	c		4.2E+00	c	3.7E-03	c		3.7E-01	c		4.6E+00	c	1.2E+01	c		
Adipic acid (hexanedioic acid)	124-04-9	1.1E+03	n	2.8E+02	n		2.8E+04	n		1.1E+03	n	1.0E+06	n	>S	5.4E+02	n	1.4E+02	n		1.4E+04	n		5.4E+02	n	4.1E+05	n	>S	
Alachlor	15972-60-8	2.4E+02	c	1.9E-02	m		1.9E+00	m							2.4E+02	c	9.5E-03	m		9.5E-01	m						
Aldicarb	116-06-3	6.8E+02	n	1.8E-02	m		1.8E+00	m							6.8E+02	n	8.9E-03	m		8.9E-01	m						
Aldicarb sulfone	1646-88-4	6.8E+02	n	1.4E-02	m		1.4E+00	m							6.8E+02	n	6.9E-03	m		6.9E-01	m						
Aldrin	309-00-2	1.0E+00	c	2.3E-01	c		2.3E+01	c		1.4E+01	c	1.4E+04	c	>S	9.7E-01	c	1.2E-01	c		1.2E+01	c		7.2E+00	c	9.2E+02	c	>S	
Allyl alcohol	107-18-6	2.4E+01	n	7.5E-01	n		7.5E+01	n		2.4E+01	n	2.5E+03	n		1.2E+01	n	3.7E-01	n		3.7E+01	n		1.2E+01	n	1.6E+02	n		
Allyl chloride	107-05-1	2.1E+01	n	3.0E+00	n		3.0E+02	n		2.1E+01	n	5.3E+01	n		1.1E+01	n	1.5E+00	n		1.5E+02	n		1.1E+01	n	3.4E+00	n		
Aluminum	7429-90-5	6.2E+05	n	5.2E+05	n	>S	1.0E+06	n	>S					1.4E+03	5.7E+05	n	2.6E+05	n	>S	1.0E+06	n	>S					7.1E+02
Ametryn	834-12-8	6.1E+03	n	2.1E+01	n		2.1E+03	n							6.1E+03	n	1.1E+01	n		1.1E+03	n						
Amino-2,6-dinitrotoluene, 4-	19406-51-0	5.9E+01	n	2.0E-01	n		2.0E+01	n		1.2E+02	n	6.4E+04	n	>S	4.0E+01	n	1.0E-01	n		1.0E+01	n		6.3E+01	n	4.2E+03	n	>S	
Amino-4,6-dinitrotoluene, 2-	35572-78-2	6.5E+01	n	3.0E-01	n		3.0E+01	n		1.5E+02	n	9.6E+04	n	>S	4.6E+01	n	1.5E-01	n		1.5E+01	n		7.8E+01	n	6.2E+03	n	>S	
Aminobiphenyl, 4- (1,1-biphenyl-4-amin	92-67-1	3.1E+00	c	2.4E-02	c		2.4E+00	c							3.1E+00	c	1.2E-02	c		1.2E+00	c						
Aminopyridine, 4-	504-24-5	1.1E+01	n	2.8E-03	n		2.8E-01	n		4.6E+01	n	1.3E+04	n		8.6E+00	n	1.4E-03	n		1.4E-01	n		2.4E+01	n	8.3E+02	n		
Ammonia	7664-41-7	2.1E+03	n							2.1E+03	n	7.9E+03	n	3.1E+00	1.1E+03	n							1.1E+03	n	5.1E+02	n		1.6E+00
Ammonium polyphosphate*	6833-79-9																										
Ammonium salts*	NA																										
Aniline	62-53-3	1.8E+02	n	8.2E-01	c		8.2E+01	c		1.8E+02	n	3.6E+04	n		9.3E+01	n	4.1E-01	c		4.1E+01	c		9.4E+01	n	2.3E+03	n		
Anthracene	120-12-7	1.9E+05	n	2.1E+04	n	>S	1.0E+06	n	>S						1.9E+05	n	1.0E+04	n	>S	1.0E+06	n	>S					
Anthraquinone, 9,10-	84-65-1	1.4E+04	n	7.1E+01	n	>S	7.1E+03	n	>S						1.4E+04	n	3.5E+01	n	>S	3.5E+03	n	>S					
Antimony	7440-36-0	3.1E+02	n	5.4E+00	m	>S	5.4E+02	m	>S						3.1E+02	n	2.7E+00	m	>S	2.7E+02	m	>S					
Aramite	140-57-8	7.6E+02	c		c			c							7.6E+02	c		c			c						
Arsenic	7440-38-2	2.0E+02	c	5.0E+00	m	>S	5.0E+02	m	>S						2.0E+02	c	2.5E+00	m	>S	2.5E+02	m	>S					
Arsine	7784-42-1	1.1E+00	n							1.1E+00	n				5.5E-01	n							5.5E-01	n				
Asbestos	1332-21-4	4.9E+03	c												2.5E+03	c											
Atrazine	1912-24-9	8.6E+01	c	2.5E-02	m		2.5E+00	m		4.7E+03	n	1.0E+06	n	>S	8.6E+01	c	1.2E-02	m		1.2E+00	m		2.4E+03	n	1.4E+05	n	>S	
Azinphos-methyl (guthion)	86-50-0	1.0E+03	n	1.3E+00	n	>S	1.3E+02	n	>S						1.0E+03	n	6.6E-01	n	>S	6.6E+01	n	>S					
Azobenzene	103-33-3	1.6E+02	c	4.0E+01	c		4.0E+03	c	>S	2.3E+03	c	1.0E+06	c	>S	1.5E+02	c	2.0E+01	c		2.0E+03	c	>S	1.2E+03	c	1.6E+05	c	>S	
Barium	7440-39-3	1.0E+05	n	4.4E+02	m	>S	4.4E+04	m	>S						8.9E+04	n	2.2E+02	m	>S	2.2E+04	m	>S					
Bayleton	43121-43-3	2.0E+04	n	2.2E+01	n		2.2E+03	n	>S						2.0E+04	n	1.1E+01	n		1.1E+03	n	>S					
Benefin (benfluralin)	1861-40-1	2.0E+05	n	1.5E+05	n	>S	1.0E+06	n	>S						2.0E+05	n	7.3E+04	n	>S	1.0E+06	n	>S					

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area													30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)
Benomyl	17804-35-2	3.4E+04	n	9.1E+00	n	>S	9.1E+02	n	>S							3.4E+04	n	4.6E+00	n	>S	4.6E+02	n	>S						
Benz-a-anthracene	56-55-3	2.4E+01	c	4.0E+01	c		4.0E+03	c	>S	6.3E+03	c	1.0E+06	c	>S		2.4E+01	c	2.0E+01	c		2.0E+03	c	>S	3.2E+03	c	1.0E+06	c	>S	
Benzaldehyde	100-52-7	6.7E+02	n	3.1E+01	n		3.1E+03	n		6.7E+02	n	3.1E+04	n	>S		3.4E+02	n	1.6E+01	n		1.6E+03	n		3.5E+02	n	2.0E+03	n		
Benzene	71-43-2	1.8E+02	c	2.6E-02	m		2.6E+00	m		2.7E+02	c	1.6E+03	c			1.1E+02	c	1.3E-02	m		1.3E+00	m		1.4E+02	c	1.0E+02	c		
Benzenedicarbonitrile, 1,3-	626-17-5	4.1E+03	n	9.7E-01	n		9.7E+01	n								4.1E+03	n	4.9E-01	n		4.9E+01	n							
Benzenedicarboxylic acid, 1,2-disodecyl	26761-40-0	4.1E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S		4.0E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S	
Benzenethiol	108-98-5	5.2E+00	n	2.0E-03	n		2.0E-01	n		1.1E+01	n	1.8E+02	n			3.6E+00	n	1.0E-03	n		1.0E-01	n		5.5E+00	n	1.1E+01	n		
Benzidine	92-87-5	4.7E-02	c	2.4E-05	c		2.4E-03	c		1.1E-01	c	2.3E+01	c			3.3E-02	c	1.2E-05	c		1.2E-03	c		5.4E-02	c	1.9E+00	c		
Benzo-a-pyrene	50-32-8	2.4E+00	c	7.6E+00	m		7.6E+02	m	>S	1.4E+03	c	1.0E+06	c	>S		2.4E+00	c	3.8E+00	m		3.8E+02	m	>S	7.3E+02	c	1.0E+06	c	>S	
Benzo-b-fluoranthene	205-99-2	2.4E+01	c	1.3E+02	c	>S	1.3E+04	c	>S	1.0E+04	c	1.0E+06	c	>S		2.4E+01	c	6.7E+01	c	>S	6.7E+03	c	>S	5.3E+03	c	1.0E+06	c	>S	
Benzo-e-pyrene	192-97-2	1.9E+04	n	3.4E+05	n	>S	1.0E+06	n	>S							1.9E+04	n	1.7E+05	n	>S	1.0E+06	n	>S						
Benzo-g,h,i-perylene	191-24-2	1.9E+04	n	1.4E+05	n	>S	1.0E+06	n	>S							1.9E+04	n	6.9E+04	n	>S	1.0E+06	n	>S						
Benzoic acid	65-85-0	9.6E+02	n	5.7E+02	n		5.7E+04	n	>S	9.7E+02	n	2.8E+05	n	>S		5.0E+02	n	2.8E+02	n		2.8E+04	n	>S	5.0E+02	n	1.8E+04	n	>S	
Benzo-j-fluoranthene	205-82-3	2.4E+01	c	5.9E+01	c	>S	5.9E+03	c	>S	5.4E+03	c	1.0E+06	c	>S		2.4E+01	c	2.9E+01	c	>S	2.9E+03	c	>S	2.8E+03	c	1.0E+06	c	>S	
Benzo-k-fluoranthene	207-08-9	2.4E+02	c	1.4E+03	c	>S	1.4E+05	c	>S	2.6E+05	c	1.0E+06	c	>S		2.4E+02	c	6.9E+02	c	>S	6.9E+04	c	>S	1.3E+05	c	1.0E+06	c	>S	
Benzophenone	119-61-9	4.6E+03	n	5.1E+01	n		5.1E+03	n	>S							4.6E+03	n	2.5E+01	n		2.5E+03	n	>S						
Benzotrichloride	98-07-7	1.5E+00	c	9.5E-03	c		9.5E-01	c		9.6E+01	n	7.2E+03	n	>S		1.5E+00	c	4.7E-03	c		4.7E-01	c		4.9E+01	n	4.6E+02	n		
Benzoyl peroxide	94-36-0	8.4E+03	n	1.6E+02	n		1.6E+04	n	>S	1.1E+04	n	1.0E+06	n	>S		4.9E+03	n	8.1E+01	n		8.1E+03	n	>S	5.7E+03	n	6.4E+05	n	>S	
Benzyl alcohol	100-51-6	1.2E+04	n	8.7E+01	n		8.7E+03	n		1.3E+04	n	1.0E+06	n	>S		6.3E+03	n	4.4E+01	n		4.4E+03	n		6.4E+03	n	2.0E+05	n	>S	
Benzyl chloride	100-44-7	4.2E+01	n	1.1E-01	c		1.1E+01	c		4.3E+01	n	1.3E+03	n			2.2E+01	n	5.6E-02	c		5.6E+00	c		2.2E+01	n	8.4E+01	n		
Benzyl dichloride	98-87-3	1.1E+02	c	1.4E-01	c		1.4E+01	c		1.5E+02	n	6.6E+03	n	>S		8.0E+01	n	7.1E-02	c		7.1E+00	c		8.0E+01	n	4.2E+02	n		
Beryllium	7440-41-7	2.5E+02	n	1.8E+00	m	>S	1.8E+02	m	>S							2.5E+02	n	9.2E-01	m	>S	9.2E+01	m	>S						
Biphenyl, 1,1-	92-52-4	3.7E+02	n	7.6E+02	n		7.6E+04	n	>S	3.8E+02	n	5.9E+04	n	>S		1.9E+02	n	3.8E+02	n		3.8E+04	n	>S	1.9E+02	n	3.8E+03	n	>S	
Biphenyl, 1,1'-, 2-phenoxy-	6738-04-1	5.1E+04	n	2.2E+05	n	>S	1.0E+06	n	>S							5.1E+04	n	1.1E+05	n	>S	1.0E+06	n	>S						
Biquinoline, 2,2'-	119-91-5	2.0E+03	n	8.0E+01	n		8.0E+03	n	>S							2.0E+03	n	4.0E+01	n		4.0E+03	n	>S						
Bis (2-chloroethoxy) methane	111-91-1	9.1E+00	c	2.6E-02	c		2.6E+00	c		1.9E+01	c	1.9E+03	c			6.2E+00	c	1.3E-02	c		1.3E+00	c		9.8E+00	c	1.2E+02	c		
Bis (2-chloroethyl) ether	111-44-4	4.9E+00	c	4.7E-03	c		4.7E-01	c		6.0E+00	c	4.0E+02	c			2.8E+00	c	2.4E-03	c		2.4E-01	c		3.1E+00	c	2.6E+01	c		
Bis (2-chloroisopropyl) ether	108-60-1	1.5E+02	c	4.3E-01	c		4.3E+01	c		3.5E+02	c	2.1E+04	c			1.1E+02	c	2.1E-01	c		2.1E+01	c		1.8E+02	c	1.4E+03	c		
Bis (2-chloromethyl) ether	542-88-1	9.0E-03	c	1.8E-05	c		1.8E-03	c		9.7E-03	c	2.8E-01	c			4.8E-03	c	9.2E-06	c		9.2E-04	c		5.0E-03	c	1.8E-02	c		
Bis (2-ethyl-hexyl) phthalate	117-81-7	5.6E+02	c	1.6E+02	m		1.6E+04	m	>S							5.6E+02	c	8.2E+01	m		8.2E+03	m	>S						
Bismuth	7440-69-9	4.1E+05	n		n			n								4.1E+05	n		n			n							
Bisphenol A	80-05-7	2.7E+04	n	8.7E+01	n		8.7E+03	n		1.3E+05	n	1.0E+06	n	>S		2.3E+04	n	4.4E+01	n		4.4E+03	n		6.9E+04	n	1.0E+06	n	>S	
Boron[5]	7440-42-8	1.9E+05	n		n			n								1.9E+05	n		n			n							
Bromacil	314-40-9	6.8E+04	n	5.1E+01	n		5.1E+03	n								6.8E+04	n	2.6E+01	n		2.6E+03	n							
Bromo-2-chloroethane, 1-	107-04-0	1.0E+03	n	1.0E+01	n		1.0E+03	n		1.1E+03	n	1.3E+04	n			5.5E+02	n	5.2E+00	n		5.2E+02	n		5.5E+02	n	8.1E+02	n		
Bromobenzene	108-86-1	2.2E+02	n	1.7E+01	n		1.7E+03	n		2.3E+02	n	6.2E+03	n	>S		1.2E+02	n	8.6E+00	n		8.6E+02	n		1.2E+02	n	4.0E+02	n		
Bromodichloromethane	75-27-4	4.6E+02	c	1.5E-01	c		1.5E+01	c								4.6E+02	c	7.3E-02	c		7.3E+00	c							
Bromoform	75-25-2	1.0E+03	c	1.4E+00	c		1.4E+02	c		1.4E+03	c	4.7E+04	c	>S		6.0E+02	c	7.1E-01	c		7.1E+01	c		7.2E+02	c	3.1E+03	c		
Bromomethane	74-83-9	1.0E+02	n	3.9E-01	n		3.9E+01	n		1.1E+02	n	2.5E+02	n			5.3E+01	n	2.0E-01	n		2.0E+01	n		5.5E+01	n	1.6E+01	n		
Bromophenyl phenylether, 4-	101-55-3	1.2E+00	c	7.9E-01	c		7.9E+01	c		1.6E+01	c	1.5E+04	c	>S		1.1E+00	c	4.0E-01	c		4.0E+01	c		8.4E+00	c	1.0E+03	c		
Butadiene, 1,3-	106-99-0	7.1E+02	n							7.1E+02	n	6.9E+02	n			3.6E+02	n							3.6E+02	n	4.5E+01	n		
Butadiene, 2-methyl-1,3- (isoprene)	78-79-5	5.3E+04	n	3.3E+01	n		3.3E+03	n		3.9E+05	n	8.7E+05	n	>S		4.7E+04	n	1.7E+01	n		1.7E+03	n		2.0E+05	n	5.6E+04	n	>S	
Butanal (butyraldehyde)	123-72-8	1.3E+04	n	9.4E+00	n		9.4E+02	n		1.7E+04	n	4.8E+05	n	>S		7.7E+03	n	4.7E+00	n		4.7E+02	n		8.8E+03	n	3.1E+04	n		
Butane, 2,3-dimethyl-	79-29-8	5.3E+04	n	8.5E+02	n		8.5E+04	n	>S	3.9E+05	n	6.4E+05	n	>S		4.7E+04	n	4.2E+02	n		4.2E+04	n	>S	2.0E+05	n	4.1E+04	n	>S	
Butanoic acid (butyric acid)	107-92-6	1.8E+02	n	7.0E+01	n		7.0E+03	n		1.8E+02	n	5.1E+04	n			9.3E+01	n	3.5E+01	n		3.5E+03	n		9.3E+01	n	3.3E+03	n		
Butanol, 2-	78-92-2	1.6E+04	n	1.6E+01	n		1.6E+03	n		2.0E+04	n	1.0E+06	n	>S		9.2E+03	n	7.8E+00	n		7.8E+02	n		1.0E+04	n	1.0E+05	n		
Butanol, 2-methyl-2-	75-85-4	8.3E+03	n	1.8E+00	n		1.8E+02	n		4.4E+04	n	1.0E+06	n	>S		7.0E+03	n	8.8E-01	n		8.8E+01	n		2.2E+04	n	1.4E+05	n	>S	
Butanol, n-	71-36-3	5.8E+03	n	1.6E+01	n		1.6E+03	n		6.2E+03	n	6.0E+05	n	>S		3.1E+03	n	7.9E+00	n		7.9E+02	n		3.2E+03	n	3.8E+04	n		
Butene, 1-	106-98-9	5.3E+04	n	1.3E+02	n		1.3E+04	n	>S	3.9E+05	n	4.2E+05	n	>S		4.7E+04	n	6.6E+01	n		6.6E+03	n	>S	2.0E+05	n	2.7E+04	n	>S	

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Butene, cis-2-	590-18-1	5.3E+04	n	9.6E+01	n	9.6E+03	n	>S	3.9E+05	n	4.4E+05	n	>S		4.7E+04	n	4.8E+01	n	4.8E+03	n	>S	2.0E+05	n	2.9E+04	n	>S	
Butene, trans-2-	624-64-6	5.3E+04	n	9.6E+01	n	9.6E+03	n	>S	3.9E+05	n	4.4E+05	n	>S		4.7E+04	n	4.8E+01	n	4.8E+03	n	>S	2.0E+05	n	2.9E+04	n	>S	
Butoxy ethanol, 2- (Ethylene glycol mon	111-76-2	3.1E+05	n	8.8E+01	n	8.8E+03	n		1.0E+06	n	1.0E+06	n	>S		2.8E+05	n	4.4E+01	n	4.4E+03	n		1.0E+06	n	1.0E+06	n	>S	
Butyl acetate	123-86-4	1.7E+03	n	3.1E+01	n	3.1E+03	n		1.7E+03	n	4.4E+04	n	>S		8.9E+02	n	1.5E+01	n	1.5E+03	n		9.0E+02	n	2.8E+03	n		
Butyl acrylate	141-32-2	1.8E+02	n	3.1E+00	n	3.1E+02	n		1.9E+02	n	5.2E+03	n			9.4E+01	n	1.5E+00	n	1.5E+02	n		9.5E+01	n	3.4E+02	n		
Butyl benzyl phthalate	85-68-7	1.0E+04	c	5.9E+02	c	5.9E+04	c	>S	3.5E+04	n	1.0E+06	n	>S		1.0E+04	c	3.0E+02	c	3.0E+04	c	>S	1.8E+04	n	1.0E+06	n	>S	
Butyl ether, n- (dibutyl ether)	142-96-1	3.1E+03	n	1.3E+02	n	1.3E+04	n	>S	3.2E+03	n	1.3E+05	n	>S		1.6E+03	n	6.5E+01	n	6.5E+03	n	>S	1.6E+03	n	8.1E+03	n	>S	
Butyl methacrylate	97-88-1	2.6E+04	n	7.8E+01	n	7.8E+03	n	>S	3.6E+04	n	1.0E+06	n	>S		1.6E+04	n	3.9E+01	n	3.9E+03	n	>S	1.9E+04	n	8.7E+04	n	>S	
Butylate	2008-41-5	3.4E+04	n	2.5E+01	n	2.5E+03	n	>S							3.4E+04	n	1.3E+01	n	1.3E+03	n	>S						
Butylbenzene, n-	104-51-8	6.9E+03	n	3.6E+02	n	3.6E+04	n	>S	9.2E+03	n	6.3E+05	n	>S		4.0E+03	n	1.8E+02	n	1.8E+04	n	>S	4.7E+03	n	4.1E+04	n	>S	
Butylbenzene, sec-	135-98-8	6.7E+03	n	2.5E+02	n	2.5E+04	n	>S	8.0E+03	n	4.7E+05	n	>S		3.7E+03	n	1.3E+02	n	1.3E+04	n	>S	4.1E+03	n	3.0E+04	n	>S	
Butylbenzene, tert-	98-06-6	5.7E+03	n	3.0E+02	n	3.0E+04	n	>S	6.6E+03	n	3.6E+05	n	>S		3.2E+03	n	1.5E+02	n	1.5E+04	n	>S	3.4E+03	n	2.3E+04	n	>S	
Cacodylic acid	75-60-5	2.0E+03	n	4.4E-01	n	4.4E+01	n								2.0E+03	n	2.2E-01	n	2.2E+01	n							
Cadmium	7440-43-9	8.5E+02	n	1.5E+00	m	1.5E+02	m	>S							8.5E+02	n	7.5E-01	m	7.5E+01	m	>S						
Calcium*	7440-70-2																										
Caprolactam	105-60-2	4.6E+02	n	1.4E+02	n	1.4E+04	n		4.6E+02	n	1.3E+05	n			2.3E+02	n	7.0E+01	n	7.0E+03	n		2.3E+02	n	8.5E+03	n		
Captan	133-06-2	5.5E+03	c	1.5E+02	c	1.5E+04	c	>S	1.6E+04	n	1.0E+06	n	>S		5.5E+03	c	7.5E+01	c	7.5E+03	c	>S	8.2E+03	n	1.0E+06	n	>S	
Carbaryl	63-25-2	5.2E+03	n	8.2E+01	n	8.2E+03	n	>S	5.7E+03	n	1.0E+06	n	>S		2.8E+03	n	4.1E+01	n	4.1E+03	n	>S	2.9E+03	n	1.9E+05	n	>S	
Carbazole	86-74-8	9.5E+02	c	1.0E+01	c	1.0E+03	c	>S							9.5E+02	c	5.1E+00	c	5.1E+02	c	>S						
Carbofuran	1563-66-2	4.6E+01	n	1.2E-01	m	1.2E+01	m		4.7E+01	n	1.6E+04	n	>S		2.4E+01	n	6.2E-02	m	6.2E+00	m		2.4E+01	n	1.1E+03	n		
Carbon disulfide	75-15-0	1.3E+04	n	4.1E+01	n	4.1E+03	n		1.5E+04	n	3.8E+04	n	>S		7.2E+03	n	2.0E+01	n	2.0E+03	n		7.7E+03	n	2.4E+03	n		
Carbon tetrachloride	56-23-5	3.4E+01	c	6.2E-02	m	6.2E+00	m		4.0E+01	c	1.6E+02	c			1.9E+01	c	3.1E-02	m	3.1E+00	m		2.1E+01	c	1.1E+01	c		
Carbophenothion	786-19-6	8.9E+03	n	4.4E+03	n	4.4E+05	n	>S							8.9E+03	n	2.2E+03	n	2.2E+05	n	>S						
Carbosulfan	55285-14-8	6.8E+03	n	7.5E+02	n	7.5E+04	n	>S							6.8E+03	n	3.8E+02	n	3.8E+04	n	>S						
Carboxin	5234-68-4	6.8E+04	n	2.6E+02	n	2.6E+04	n	>S							6.8E+04	n	1.3E+02	n	1.3E+04	n	>S						
Chloral	75-87-6	1.0E+03	n	1.6E+01	n	1.6E+03	n		1.0E+03	n	2.5E+05	n			5.4E+02	n	7.9E+00	n	7.9E+02	n		5.4E+02	n	1.6E+04	n		
Chloral hydrate (1,1-ethanediol, 2,2,2-tri	302-17-0	1.2E+03	n	1.6E+01	n	1.6E+03	n		1.2E+03	n	3.4E+05	n			6.0E+02	n	7.8E+00	n	7.8E+02	n		6.1E+02	n	2.3E+04	n		
Chloramben (amiben; 3-amino-2,5-dichl	133-90-4	1.0E+04	n	1.1E+01	n	1.1E+03	n								1.0E+04	n	5.6E+00	n	5.6E+02	n							
Chlordane (technical)	12789-03-6	6.6E+01	c	9.6E+00	m	9.6E+02	m	>S	2.1E+03	c	1.0E+06	c	>S		6.4E+01	c	4.8E+00	m	4.8E+02	m	>S	1.1E+03	c	4.0E+05	c	>S	
Chlordane, cis- (alpha chlordane)	5103-71-9	5.4E+01	c	1.7E+03	c	1.7E+05	c	>S	6.9E+03	c	1.0E+06	c	>S		5.4E+01	c	8.3E+02	c	8.3E+04	c	>S	3.5E+03	c	1.0E+06	c	>S	
Chlordane, gamma	57-74-9	5.3E+01	c	9.2E+01	c	9.2E+03	c	>S	1.6E+03	c	1.0E+06	c	>S		5.1E+01	c	4.6E+01	c	4.6E+03	c	>S	8.4E+02	c	2.6E+05	c	>S	
Chlorfenvinphos	470-90-6	3.9E+01	n	2.7E+00	n	2.7E+02	n		4.3E+01	n					2.1E+01	n	1.4E+00	n	1.4E+02	n		2.2E+01	n				
Chloride*	16887-00-6																										
Chlorine	7782-50-5	3.2E+01	n		m		m		3.2E+01	n		n	GW Ing		1.7E+01	n		m		m		1.7E+01	n		n	GW Ing	
Chloro-1,3-butadiene, 2-	126-99-8	1.5E+02	n						1.5E+02	n	3.3E+02	n			7.7E+01	n						7.7E+01	n	2.1E+01	n		
Chloro-2-propanol, 1-	127-00-4	2.0E+04	n	3.2E+00	n	3.2E+02	n								2.0E+04	n	1.6E+00	n	1.6E+02	n							
Chloro-3-methylphenol, 4-	59-50-7	3.2E+03	n	1.4E+01	n	1.4E+03	n		4.8E+04	n	1.0E+06	n	>S		3.0E+03	n	6.8E+00	n	6.8E+02	n		2.5E+04	n	1.0E+06	n	>S	
Chloroaniline, p-	106-47-8	9.5E+01	c	4.7E-02	c	4.7E+00	c		2.0E+03	n	4.4E+05	n	>S		9.5E+01	c	2.3E-02	c	2.3E+00	c		1.0E+03	n	2.8E+04	n	>S	
Chlorobenzene	108-90-7	1.0E+03	n	1.1E+00	m	1.1E+02	m		1.1E+03	n	1.8E+04	n	>S		5.4E+02	n	5.5E-01	m	5.5E+01	m		5.5E+02	n	1.1E+03	n		
Chlorobenzilate	510-15-6	6.3E+01	c	2.6E-01	c	2.6E+01	c		5.9E+02	c	4.0E+05	c	>S		5.7E+01	c	1.3E-01	c	1.3E+01	c		3.0E+02	c	2.6E+04	c	>S	
Chlorobromomethane (bromochlorometh	74-97-5	1.0E+03	n	9.1E+00	n	9.1E+02	n		1.1E+03	n	9.8E+03	n			5.5E+02	n	4.5E+00	n	4.5E+02	n		5.5E+02	n	6.3E+02	n		
Chlorodifluoromethane	75-45-6	1.0E+06	n						1.0E+06	n	1.0E+06	n	>S		5.5E+05	n						5.5E+05	n	8.1E+04	n	>S	
Chloroethane (ethyl chloride)	75-00-3	1.4E+05	n	9.2E+01	n	9.2E+03	n		2.1E+05	n	5.1E+05	n	>S		8.7E+04	n	4.6E+01	n	4.6E+03	n		1.1E+05	n	3.3E+04	n	>S	
Chloroethanol, 2-	107-07-3	4.8E+02	n	5.8E+01	n	5.8E+03	n		4.8E+02	n	1.0E+05	n			2.5E+02	n	2.9E+01	n	2.9E+03	n		2.5E+02	n	6.5E+03	n		
Chloroethoxy ethene, 2- (2-chloroethylvi	110-75-8	6.4E+00	n	6.5E-03	c	6.5E-01	c		6.4E+00	n	9.5E+01	n			3.3E+00	n	3.2E-03	c	3.2E-01	c		3.3E+00	n	6.2E+00	n		
Chloroform	67-66-3	2.6E+01	c	3.0E+00	n	3.0E+02	n		2.6E+01	c	1.4E+02	c			1.3E+01	c	1.5E+00	n	1.5E+02	n		1.3E+01	c	9.0E+00	c		
Chlorohexane, 1-	544-10-5	1.4E+04	n	1.2E+02	n	1.2E+04	n	>S	2.1E+04	n	4.1E+05	n	>S		8.7E+03	n	5.9E+01	n	5.9E+03	n	>S	1.1E+04	n	2.6E+04	n	>S	
Chloromethane (methyl chloride)	74-87-3	2.9E+02	c	9.1E-01	c	9.1E+01	c		3.3E+02	c	3.5E+02	c			1.6E+02	c	4.5E-01	c	4.5E+01	c		1.7E+02	c	2.3E+01	c		
Chloronaphthalene, 1- (Chloronaphthaler	90-13-1	5.0E+04	n	2.2E+03	n	2.2E+05	n	>S							5.0E+04	n	1.1E+03	n	1.1E+05	n	>S						

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)	
Chloronaphthalene, 2- (chloronaphthalen	91-58-7	5.0E+04	n	2.0E+03	n	2.0E+05	n	>S						5.0E+04	n	1.0E+03	n	1.0E+05	n	>S					
Chloronitrobenzene, p- (1-chloro-4-nitrol	100-00-5	7.8E+01	n	4.6E-01	n	4.6E+01	n		8.8E+01	n	6.7E+03	n	>S	4.2E+01	n	2.3E-01	n	2.3E+01	n		4.5E+01	n	4.3E+02	n	
Chlorophenol, 2-	95-57-8	3.2E+03	n	4.9E+00	n	4.9E+02	n		8.8E+03	n	1.0E+06	n	>S	2.4E+03	n	2.4E+00	n	2.4E+02	n		4.5E+03	n	7.4E+04	n	
Chlorophenol, 3-	108-43-0	2.9E+03	n	2.3E+00	n	2.3E+02	n		1.8E+04	n	1.0E+06	n	>S	2.5E+03	n	1.2E+00	n	1.2E+02	n		9.1E+03	n	3.4E+05	n	>S
Chlorophenol, 4-	106-48-9	2.9E+03	n	2.5E+00	n	2.5E+02	n		1.8E+04	n	1.0E+06	n	>S	2.5E+03	n	1.2E+00	n	1.2E+02	n		9.5E+03	n	3.6E+05	n	>S
Chlorophenyl phenylether, 4-	7005-72-3	9.8E-01	c	7.2E-02	c	7.2E+00	c		4.2E+00	c	1.1E+03	c	>S	8.0E-01	c	3.6E-02	c	3.6E+00	c		2.2E+00	c	7.0E+01	c	
Chloropropane, 2-	75-29-6	2.0E+03	n	1.6E+01	n	1.6E+03	n		2.1E+03	n	4.8E+03	n		1.1E+03	n	8.1E+00	n	8.1E+02	n		1.1E+03	n	3.1E+02	n	
Chlorothalonil	1897-45-6	1.7E+03	c	1.8E+01	c	1.8E+03	c							1.7E+03	c	9.1E+00	c	9.1E+02	c						
Chlorotoluene, o- (2-chlorotoluene)	95-49-8	4.2E+03	n	2.7E+01	n	2.7E+03	n		6.0E+03	n	2.0E+05	n	>S	2.5E+03	n	1.4E+01	n	1.4E+03	n		3.1E+03	n	1.3E+04	n	>S
Chlorotoluene, p- (4-chlorotoluene)	106-43-4	6.7E+00	n	1.1E+02	n	1.1E+04	n	>S	6.7E+00	n	2.4E+02	n		3.5E+00	n	5.6E+01	n	5.6E+03	n	>S	3.5E+00	n	1.6E+01	n	GW Ing
Chlorpyrifos	2921-88-2	3.9E+02	n	4.4E+01	n	4.4E+03	n	>S	4.8E+02	n	4.5E+05	n	>S	2.2E+02	n	2.2E+01	n	2.2E+03	n	>S	2.5E+02	n	2.9E+04	n	>S
Chromium (III)	16065-83-1	9.5E+04	n	2.4E+03	m	>S	2.4E+05	m	>S					5.7E+04	n	1.2E+03	m	>S	1.2E+05	m	>S					
Chromium (total)	7440-47-3	9.5E+04	n	2.4E+03	m	>S	2.4E+05	m	>S					5.7E+04	n	1.2E+03	m	>S	1.2E+05	m	>S					
Chromium (VI)	18540-29-9	1.0E+03	n	2.8E+01	m	>S	2.8E+03	m	>S					1.0E+03	n	1.4E+01	m	>S	1.4E+03	m	>S					
Chrysene	218-01-9	2.4E+03	c	3.5E+03	c	>S	3.5E+05	c	>S	9.9E+05	c	1.0E+06	c	>S	2.4E+03	c	1.7E+03	c	>S	1.7E+05	c	>S	5.1E+05	c	1.0E+06	c	>S
Cobalt	7440-48-4	2.8E+02	n	2.0E+01	n	>S	2.0E+03	n	>S					2.7E+02	n	9.9E+00	n	>S	9.9E+02	n	>S					
Copolymer acrylamide	69418-26-4	4.8E+00	n	2.8E-02	n		2.8E+00	n		5.0E+00	n	1.3E+03	n		2.5E+00	n	1.4E-02	n		1.4E+00	n		2.6E+00	n	8.7E+01	n	
Copper	7440-50-8	3.8E+04	n	1.0E+03	a	>S	1.0E+05	a	>S					8.0E+02	3.7E+04	n	5.2E+02	a	>S	5.2E+04	a	>S					4.0E+02
Coronene	191-07-1	1.4E+03	n	1.7E+05	n	>S	1.0E+06	n	>S						1.4E+03	n	8.4E+04	n	>S	1.0E+06	n	>S					
Coumaphos	56-72-4	4.8E+03	n	3.3E+02	n	>S	3.3E+04	n	>S						4.8E+03	n	1.6E+02	n	>S	1.6E+04	n	>S					
Cresol	1319-77-3	3.7E+03	n	2.0E+01	n		2.0E+03	n		4.2E+03	n	9.3E+05	n	>S	2.0E+03	n	9.9E+00	n		9.9E+02	n		2.1E+03	n	6.0E+04	n	
Cresol, m- (3-methylphenol)	108-39-4	3.7E+03	n	2.0E+01	n		2.0E+03	n		4.2E+03	n	9.3E+05	n	>S	2.0E+03	n	9.9E+00	n		9.9E+02	n		2.1E+03	n	6.0E+04	n	
Cresol, o- (2-methylphenol)	95-48-7	3.5E+03	n	2.1E+01	n		2.1E+03	n		4.0E+03	n	8.2E+05	n	>S	1.9E+03	n	1.1E+01	n		1.1E+03	n		2.0E+03	n	5.3E+04	n	
Cresol, p- (4-methylphenol)	106-44-5	1.8E+03	n	1.9E+00	n		1.9E+02	n		4.0E+03	n	8.6E+05	n	>S	1.3E+03	n	9.4E-01	n		9.4E+01	n		2.0E+03	n	5.5E+04	n	
Crotonaldehyde	123-73-9	1.5E+01	c	2.1E-03	c		2.1E-01	c		2.7E+02	n	1.8E+04	n		1.5E+01	c	1.1E-03	c		1.1E-01	c		1.4E+02	n	1.1E+03	n	
Cumene (isopropylbenzene)	98-82-8	1.1E+04	n	1.0E+03	n		1.0E+05	n	>S	1.3E+04	n	8.7E+05	n	>S	6.3E+03	n	5.2E+02	n		5.2E+04	n	>S	6.7E+03	n	5.7E+04	n	>S
Cyanazine	21725-46-2	2.3E+01	c	9.4E-03	c		9.4E-01	c							2.3E+01	c	4.7E-03	c		4.7E-01	c						
Cyanide	57-12-5	1.9E+04	n	4.0E+01	m		4.0E+03	m							1.9E+04	n	2.0E+01	m		2.0E+03	m						
Cyanogen	460-19-5	4.5E+02	n	7.3E+00	n		7.3E+02	n		4.5E+02	n	6.7E+02	n		2.3E+02	n	3.6E+00	n		3.6E+02	n		2.3E+02	n	4.3E+01	n	
Cycloate	1134-23-2	3.7E+04	n	4.5E+02	n		4.5E+04	n	>S						3.7E+04	n	2.3E+02	n		2.3E+04	n	>S					
Cyclohexane	110-82-7	1.3E+05	n	1.8E+04	n	>S	1.0E+06	n	>S	1.3E+05	n	4.0E+05	n	>S	6.5E+04	n	8.8E+03	n	>S	8.8E+05	n	>S	6.6E+04	n	2.6E+04	n	>S
Cyclohexanol	108-93-0	4.3E+04	n	8.8E+02	n	>S	8.8E+04	n	>S	4.4E+04	n	1.0E+06	n	>S	2.2E+04	n	4.4E+02	n	>S	4.4E+04	n	>S	2.2E+04	n	6.0E+05	n	>S
Cyclohexanone	108-94-1	7.0E+03	n	7.8E+02	n		7.8E+04	n	>S	7.0E+03	n	6.0E+05	n	>S	3.6E+03	n	3.9E+02	n		3.9E+04	n	>S	3.6E+03	n	3.9E+04	n	>S
Cyclohexene-1-methanol, 3-	1679-51-2	2.0E+04	n	1.1E+01	n		1.1E+03	n							2.0E+04	n	5.6E+00	n		5.6E+02	n						
Cyclopentane, methyl-	96-37-7	1.8E+04	n	4.1E+02	n		4.1E+04	n	>S	2.1E+04	n	5.3E+04	n	>S	1.0E+04	n	2.0E+02	n		2.0E+04	n	>S	1.1E+04	n	3.4E+03	n	>S
Cyclotetramethylenetetranitramine (HM)	2691-41-0	6.0E+02	n	7.0E+00	n		7.0E+02	n		6.4E+02	n	1.0E+06	n	>S	3.2E+02	n	3.5E+00	n		3.5E+02	n		3.3E+02	n	1.0E+06	n	>S
Cyclotrimethylenetrinitramine (RDX)	121-82-4	7.6E+01	n	8.3E-02	c		8.3E+00	c		7.9E+01	n	7.3E+03	n	>S	4.0E+01	n	4.1E-02	c		4.1E+00	c		4.1E+01	n	4.7E+02	n	>S
Cymene (isopropyltoluene)	99-87-6	8.8E+03	n	6.9E+02	n		6.9E+04	n	>S	9.6E+03	n	6.1E+05	n	>S	4.7E+03	n	3.5E+02	n		3.5E+04	n	>S	4.9E+03	n	3.9E+04	n	>S
Cymoxanil	57966-95-7	8.9E+03	n	1.8E+00	n		1.8E+02	n							8.9E+03	n	9.1E-01	n		9.1E+01	n						
Dacthal (DCPA)	1861-32-1	6.8E+03	n	1.4E+03	n	>S	1.4E+05	n	>S						6.8E+03	n	6.8E+02	n	>S	6.8E+04	n	>S					
Dalapon, sodium salt (2,2-dichloropropa	75-99-0	2.0E+04	n	5.8E-01	m		5.8E+01	m							2.0E+04	n	2.9E-01	m		2.9E+01	m						
DDD	72-54-8	1.0E+02	c	2.9E+01	c		2.9E+03	c	>S						1.0E+02	c	1.5E+01	c		1.5E+03	c	>S					
DDE	72-55-9	7.3E+01	c	2.6E+01	c		2.6E+03	c	>S						7.3E+01	c	1.3E+01	c		1.3E+03	c	>S					
DDT	50-29-3	7.1E+01	c	3.3E+01	c	>S	3.3E+03	c	>S	2.0E+03	c	1.0E+06	c	>S	6.8E+01	c	1.7E+01	c	>S	1.7E+03	c	>S	1.0E+03	c	3.7E+05	c	>S
Demeton	8065-48-3	2.7E+01	n	3.7E-02	n		3.7E+00	n							2.7E+01	n	1.9E-02	n		1.9E+00	n						
Diacetone alcohol (4-hydroxy-4-methyl-2	123-42-2	2.7E+04	n	5.8E+00	n		5.8E+02	n							2.7E+04	n	2.9E+00	n		2.9E+02	n						
Diallate	2303-16-4	3.1E+02	c	2.6E+00	c		2.6E+02	c							3.1E+02	c	1.3E+00	c		1.3E+02	c						
Diazinon	333-41-5	7.9E+01	n	4.7E-01	n		4.7E+01	n		9.1E+01	n	4.0E+04	n	>S	4.3E+01	n	2.4E-01	n		2.4E+01	n		4.7E+01	n	2.6E+03	n	>S
Dibenz(a,h)acridine	226-36-8	1.6E+01	c	1.3E+02	c	>S	1.3E+04	c	>S	2.6E+04	c	1.0E+06	c	>S	1.6E+01	c	6.5E+01	c	>S	6.5E+03	c	>S	1.3E+04	c	1.0E+06	c	>S

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Dibenz(a,j)acridine	224-42-0	2.4E+01	c	2.5E+02	c	>S	2.5E+04	c	>S	3.5E+04	c	1.0E+06	c	>S		2.4E+01	c	1.3E+02	c	>S	1.3E+04	c	>S	1.8E+04	c	1.0E+06	c	>S	
Dibenz-a,h-anthracene	53-70-3	2.4E+00	c	2.1E+01	c		2.1E+03	c	>S	3.3E+03	c	1.0E+06	c	>S		2.4E+00	c	1.1E+01	c		1.1E+03	c	>S	1.7E+03	c	1.0E+06	c	>S	
Dibenzo(a,e)pyrene	192-65-4	2.6E+00	c	2.9E+02	c	>S	2.9E+04	c	>S	1.2E+04	c	1.0E+06	c	>S		2.6E+00	c	1.5E+02	c	>S	1.5E+04	c	>S	6.2E+03	c	1.0E+06	c	>S	
Dibenzo(a,h)pyrene	189-64-0	2.6E-01	c	2.7E+01	c	>S	2.7E+03	c	>S	1.2E+03	c	1.0E+06	c	>S		2.6E-01	c	1.3E+01	c	>S	1.3E+03	c	>S	6.0E+02	c	1.0E+06	c	>S	
Dibenzo(a,i)pyrene	189-55-9	2.6E-01	c	2.7E+01	c		2.7E+03	c	>S	1.2E+03	c	1.0E+06	c	>S		2.6E-01	c	1.3E+01	c		1.3E+03	c	>S	6.0E+02	c	1.0E+06	c	>S	
Dibenzofuran	132-64-9	2.7E+03	n	1.0E+02	n		1.0E+04	n	>S							2.7E+03	n	5.0E+01	n		5.0E+03	n	>S						
Dibenzothiophene	132-65-0	2.0E+03	n	3.0E+02	n	>S	3.0E+04	n	>S							2.0E+03	n	1.5E+02	n	>S	1.5E+04	n	>S						
Dibromo-3-chloropropane, 1,2-	96-12-8	2.6E-01	c	1.7E-03	m		1.7E-01	m		2.6E-01	c	9.0E+00	c			1.4E-01	c	8.7E-04	m		8.7E-02	m		1.4E-01	c	5.9E-01	c		
Dibromochloromethane (chlorodibromon	124-48-1	3.4E+02	c	1.1E-01	c		1.1E+01	c								3.4E+02	c	5.5E-02	c		5.5E+00	c							
Dibromofluoromethane	1868-53-7	7.0E+04	n	4.7E+01	n		4.7E+03	n		1.1E+05	n	5.8E+05	n	>S		4.4E+04	n	2.3E+01	n		2.3E+03	n		5.5E+04	n	3.8E+04	n	>S	
Dicamba	1918-00-9	2.2E+03	n	4.4E+00	n		4.4E+02	n		2.5E+03	n	8.5E+05	n	>S		1.2E+03	n	2.2E+00	n		2.2E+02	n		1.3E+03	n	5.5E+04	n	>S	
Dichlormid	37764-25-3	1.7E+04	n	7.8E+00	n		7.8E+02	n								1.7E+04	n	3.9E+00	n		3.9E+02	n							
Dichloro-2-butene, 1,4-	764-41-0	3.3E-01	c							3.3E-01	c	1.0E+01	c			1.7E-01	c							1.7E-01	c	6.7E-01	c		
Dichloro-2-butene, 1,4- trans	110-57-6	3.4E-01	c							3.4E-01	c	1.1E+01	c			1.8E-01	c							1.8E-01	c	7.2E-01	c		
Dichlorobenzene, 1,2-	95-50-1	1.1E+03	n	1.8E+01	m		1.8E+03	m		1.1E+03	n	4.8E+04	n	>S		5.7E+02	n	8.9E+00	m		8.9E+02	m		5.7E+02	n	3.1E+03	n	>S	
Dichlorobenzene, 1,3-	541-73-1	1.7E+02	n	2.0E+01	n		2.0E+03	n	>S	1.7E+02	n	2.4E+03	n	>S		8.8E+01	n	1.0E+01	n		1.0E+03	n	>S	8.8E+01	n	1.6E+02	n		
Dichlorobenzene, 1,4-	106-46-7	1.2E+03	c	2.1E+00	m		2.1E+02	m		3.4E+03	n	1.4E+05	n	>S		1.2E+03	c	1.1E+00	m		1.1E+02	m		1.8E+03	n	9.1E+03	n	>S	
Dichlorobenzidine, 3,3-	91-94-1	4.2E+01	c	1.4E-01	c		1.4E+01	c								4.2E+01	c	7.0E-02	c		7.0E+00	c							
Dichlorobutane, 2,3-	7581-97-7	1.5E+02	n	7.7E+00	n		7.7E+02	n		1.5E+02	n	2.1E+03	n			7.7E+01	n	3.8E+00	n		3.8E+02	n		7.7E+01	n	1.4E+02	n		
Dichlorodifluoromethane	75-71-8	7.0E+04	n	7.2E+02	n		7.2E+04	n	>S	1.1E+05	n	2.0E+05	n	>S		4.3E+04	n	3.6E+02	n		3.6E+04	n	>S	5.5E+04	n	1.3E+04	n	>S	
Dichloroethane, 1,1-	75-34-3	8.2E+03	n	5.5E+01	n		5.5E+03	n		8.6E+03	n	3.8E+04	n	>S		4.3E+03	n	2.8E+01	n		2.8E+03	n		4.4E+03	n	2.5E+03	n		
Dichloroethane, 1,2-	107-06-2	2.2E+01	c	1.4E-02	m		1.4E+00	m		2.3E+01	c	1.5E+02	c			1.1E+01	c	6.9E-03	m		6.9E-01	m		1.2E+01	c	9.8E+00	c		
Dichloroethylene, 1,1-	75-35-4	6.4E+03	n	5.0E-02	m		5.0E+00	m		7.3E+03	n	1.7E+04	n			3.5E+03	n	2.5E-02	m		2.5E+00	m		3.8E+03	n	1.1E+03	n		
Dichloroethylene, cis-1,2-	156-59-2	6.4E+03	n	2.5E-01	m		2.5E+01	m		1.7E+04	n	8.1E+04	n	>S		4.7E+03	n	1.2E-01	m		1.2E+01	m		8.8E+03	n	5.2E+03	n		
Dichloroethylene, trans-1,2	156-60-5	1.2E+03	n	4.9E-01	m		4.9E+01	m		1.3E+03	n	5.3E+03	n			6.4E+02	n	2.5E-01	m		2.5E+01	m		6.6E+02	n	3.4E+02	n		
Dichlorofluoromethane	75-43-4	9.0E+02	n	4.2E+01	n		4.2E+03	n		9.0E+02	n	2.9E+03	n			4.6E+02	n	2.1E+01	n		2.1E+03	n		4.6E+02	n	1.9E+02	n		
Dichlorophenol, 2,3-	576-24-9	1.9E+03	n	1.6E+00	n		1.6E+02	n		3.5E+04	n	1.0E+06	n	>S		1.8E+03	n	8.1E-01	n		8.1E+01	n		1.8E+04	n	7.4E+05	n	>S	
Dichlorophenol, 2,4-	120-83-2	1.8E+03	n	1.1E+00	n		1.1E+02	n		1.9E+04	n	1.0E+06	n	>S		1.7E+03	n	5.3E-01	n		5.3E+01	n		9.6E+03	n	2.4E+05	n	>S	
Dichlorophenol, 2,5-	583-78-8	1.9E+03	n	1.5E+00	n		1.5E+02	n		3.4E+04	n	1.0E+06	n	>S		1.8E+03	n	7.5E-01	n		7.5E+01	n		1.7E+04	n	6.9E+05	n	>S	
Dichlorophenol, 2,6-	87-65-0	6.1E+02	n	2.0E-01	n		2.0E+01	n		5.7E+03	n	1.0E+06	n	>S		5.5E+02	n	1.0E-01	n		1.0E+01	n		2.9E+03	n	9.3E+04	n	>S	
Dichlorophenol, 3,4-	95-77-2	2.0E+03	n	6.0E+00	n		6.0E+02	n		7.9E+04	n	1.0E+06	n	>S		1.9E+03	n	3.0E+00	n		3.0E+02	n		4.1E+04	n	1.0E+06	n	>S	
Dichlorophenol, 3,5-	591-35-5	2.0E+03	n	4.0E+00	n		4.0E+02	n		6.2E+04	n	1.0E+06	n	>S		1.9E+03	n	2.0E+00	n		2.0E+02	n		3.2E+04	n	1.0E+06	n	>S	
Dichlorophenoxy, 2,4- butyric acid, 4- (2	94-82-6	5.5E+03	n	1.2E+00	n		1.2E+02	n								5.5E+03	n	5.8E-01	n		5.8E+01	n							
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	94-75-7	1.6E+03	n	2.6E+00	m		2.6E+02	m		2.0E+03	n	1.0E+06	n	>S		9.2E+02	n	1.3E+00	m		1.3E+02	m		1.0E+03	n	1.1E+05	n	>S	
Dichloroprop (2-(2,4-dichlorophenoxy) p	120-36-5	6.8E+03	n	1.4E+00	n		1.4E+02	n								6.8E+03	n	7.0E-01	n		7.0E+01	n							
Dichloropropane, 1,2-	78-87-5	8.6E+01	n	2.3E-02	m		2.3E+00	m		8.6E+01	n	7.4E+02	n			4.4E+01	n	1.1E-02	m		1.1E+00	m		4.4E+01	n	4.8E+01	n		
Dichloropropane, 1,3-	142-28-9	9.9E+01	c	1.4E-01	c		1.4E+01	c		1.5E+02	c	3.0E+03	c			6.1E+01	c	7.2E-02	c		7.2E+00	c		7.7E+01	c	2.0E+02	c		
Dichloropropane, 2,2-	594-20-7	8.6E+01	n	2.7E-01	c		2.7E+01	c		8.6E+01	n	7.1E+02	n			4.4E+01	n	1.4E-01	c		1.4E+01	c		4.4E+01	n	4.6E+01	n		
Dichloropropanol, 2,3-	616-23-9	2.0E+03	n	7.2E-01	n		7.2E+01	n								2.0E+03	n	3.6E-01	n		3.6E+01	n							
Dichloropropene, 1,1-	563-58-6	9.9E+01	c	3.0E-01	c		3.0E+01	c		1.5E+02	c	4.8E+02	c			6.1E+01	c	1.5E-01	c		1.5E+01	c		7.7E+01	c	3.1E+01	c		
Dichloropropene, 1,3- (mixed isomers)	542-75-6	9.9E+01	c	8.8E-02	c		8.8E+00	c		1.5E+02	c	1.3E+03	c			6.1E+01	c	4.4E-02	c		4.4E+00	c		7.7E+01	c	8.3E+01	c		
Dichloropropene, cis 1,3-	10061-01-5	5.3E+01	c	1.5E-02	c		1.5E+00	c		1.4E+02	n	1.3E+03	n			4.3E+01	n	7.4E-03	c		7.4E-01	c		7.4E+01	n	8.2E+01	n		
Dichloropropene, trans 1,3-	10061-02-6	9.9E+01	c	8.0E-02	c		8.0E+00	c		1.5E+02	c	1.3E+03	c			6.1E+01	c	4.0E-02	c		4.0E+00	c		7.7E+01	c	8.1E+01	c		
Dichlorvos	62-73-7	6.6E+01	c	1.0E+06	c		1.0E+06	c		1.0E+06	n	1.0E+06	n			6.6E+01	c	5.5E+05	c		1.0E+06	c		8.7E+05	n	1.0E+06	n		
Dicrotophos (bidrin)	141-66-2	6.8E+01	n	1.4E-02	n		1.4E+00	n								6.8E+01	n	7.0E-03	n		7.0E-01	n							
Dicyclopentadiene	77-73-6	8.2E+03	n		n			n								8.2E+03	n		n			n							
Dieldrin	60-57-1	1.2E+00	c	1.1E-01	c		1.1E+01	c		5.3E+01	c	1.8E+05	c	>S		1.1E+00	c	5.5E-02	c		5.5E+00	c		2.7E+01	c	1.2E+04	c	>S	
Diethanolamine	111-42-2	1.8E+02	n	7.0E-02	n		7.0E+00	n		3.9E+02	n	4.2E+05	n			1.3E+02	n	3.5E-02	n		3.5E+00	n		2.0E+02	n	1.6E+05	n		
Diethyl phthalate	84-66-2	4.0E+03	n	4.7E+02	n		4.7E+04	n	>S	4.0E+03	n	1.0E+06	n	>S		2.0E+03	n	2.3E+02	n		2.3E+04	n	>S	2.1E+03	n	9.8E+04	n	>S	

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Diethylene glycol	111-46-6	1.0E+06	n	2.8E+02	n		2.8E+04	n								1.0E+06	n	1.4E+02	n		1.4E+04	n						
Diethylene glycol monobutyl ether	112-34-5	3.1E+03	n	1.6E+00	n		1.6E+02	n		5.7E+03	n	1.0E+06	n	>S		2.0E+03	n	7.8E-01	n		7.8E+01	n		2.9E+03	n	1.2E+05	n	>S	
Diethylhexyl adipate	103-23-1	1.6E+04	c	6.1E+03	m	>S	6.1E+05	m	>S	4.5E+04	n	1.0E+06	n	>S		1.6E+04	c	3.0E+03	m	>S	3.0E+05	m	>S	2.3E+04	n	1.0E+06	n	>S	
Diethylstilbestrol	56-53-1	4.1E-03	c	1.3E-03	c		1.3E-01	c								4.1E-03	c	6.5E-04	c		6.5E-02	c							
Diisobutylene (trimethyl-1-pentene, 2,4,4	107-39-1	4.0E+03	n	1.8E+03	n	>S	1.8E+05	n	>S	4.3E+03	n	1.3E+04	n	>S		2.1E+03	n	9.0E+02	n	>S	9.0E+04	n	>S	2.2E+03	n	8.6E+02	n	>S	
Diisopropylbenzene, p-	100-18-5	4.0E+03	n	2.8E+02	n		2.8E+04	n	>S	6.5E+03	n	7.1E+05	n	>S		2.5E+03	n	1.4E+02	n		1.4E+04	n	>S	3.3E+03	n	4.6E+04	n	>S	
Diisopropyl ether (2,2'-oxybis-propane)	108-20-3	7.9E+03	n	3.6E+01	n		3.6E+03	n		8.6E+03	n	7.7E+04	n	>S		4.2E+03	n	1.8E+01	n		1.8E+03	n		4.4E+03	n	5.0E+03	n		
Dimethenamid	87674-68-8	1.0E+04	n	3.1E+00	n		3.1E+02	n								1.0E+04	n	1.5E+00	n		1.5E+02	n							
Dimethoate	60-51-5	1.4E+02	n	3.0E-02	n		3.0E+00	n								1.4E+02	n	1.5E-02	n		1.5E+00	n							
Dimethoxybenzidine, 3,3'-	119-90-4	1.4E+03	c	6.3E-01	c		6.3E+01	c								1.4E+03	c	3.2E-01	c		3.2E+01	c							
Dimethylphenethylamine, alpha, alpha-	122-09-8	1.4E+03	n	1.1E+00	n		1.1E+02	n		2.9E+05	n	1.0E+06	n	>S		1.4E+03	n	5.6E-01	n		5.6E+01	n		1.5E+05	n	1.0E+06	n	>S	
Dimethyl phenol, 2,4-	105-67-9	4.7E+03	n	9.7E+00	n		9.7E+02	n		7.1E+03	n	1.0E+06	n	>S		2.9E+03	n	4.8E+00	n		4.8E+02	n		3.6E+03	n	9.8E+04	n	>S	
Dimethylaminoazobenzene, p-	60-11-7	6.8E+00	n	3.4E+00	n		3.4E+02	n								6.8E+00	n	1.7E+00	n		1.7E+02	n							
Dimethylbenz-a-anthracene, 7,12-	57-97-6	6.9E-02	c	2.8E+00	c		2.8E+02	c		2.4E+02	c	1.0E+06	c	>S		6.9E-02	c	1.4E+00	c		1.4E+02	c		1.2E+02	c	1.0E+06	c	>S	
Dimethylbenzidine, 3,3'-	119-93-7	1.7E+00	c	1.8E-03	c		1.8E-01	c								1.7E+00	c	9.2E-04	c		9.2E-02	c							
Dimethylnaphthalene, 1,3-	575-41-7	2.5E+04	n	2.4E+03	n		2.4E+05	n	>S							2.5E+04	n	1.2E+03	n		1.2E+05	n	>S						
Dimethylphthalate	131-11-3	1.8E+03	n	1.9E+02	n		1.9E+04	n	>S	1.8E+03	n	4.7E+05	n	>S		9.3E+02	n	9.3E+01	n		9.3E+03	n	>S	9.3E+02	n	3.0E+04	n	>S	
Di-n-butyl phthalate	84-74-2	2.6E+04	n	9.9E+03	n		9.9E+05	n	>S	4.2E+04	n	1.0E+06	n	>S		1.6E+04	n	5.0E+03	n		5.0E+05	n	>S	2.1E+04	n	1.0E+06	n	>S	
Dinitro-2-methylphenol, 4,6- (dinitro-o-c	534-52-1	3.4E+01	n	1.4E-02	n		1.4E+00	n		6.6E+01	n	2.3E+04	n	>S		2.3E+01	n	7.0E-03	n		7.0E-01	n		3.4E+01	n	1.5E+03	n		
Dinitrobenzene, 1,3- (dinitrobenzene, 2,4	99-65-0	5.7E+01	n	2.3E-02	n		2.3E+00	n		3.4E+02	n	8.3E+04	n	>S		4.9E+01	n	1.1E-02	n		1.1E+00	n		1.7E+02	n	5.4E+03	n	>S	
Dinitrobenzene, 1,4-	100-25-4	5.8E+01	n	2.2E-02	n		2.2E+00	n		3.8E+02	n	1.1E+05	n	>S		5.0E+01	n	1.1E-02	n		1.1E+00	n		1.9E+02	n	7.0E+03	n	>S	
Dinitrophenol, 2,4-	51-28-5	1.4E+03	n	2.8E-01	n		2.8E+01	n								1.4E+03	n	1.4E-01	n		1.4E+01	n							
Dinitrophenol, 2,5-	329-71-5	1.4E+03	n	2.9E-01	n		2.9E+01	n								1.4E+03	n	1.4E-01	n		1.4E+01	n							
Dinitrotoluene, 2,4-	121-14-2	2.8E+01	c	1.2E-02	c		1.2E+00	c		4.1E+01	n	6.8E+03	n	>S		2.1E+01	n	6.0E-03	c		6.0E-01	c		2.1E+01	n	4.4E+02	n		
Dinitrotoluene, 2,6-	606-20-2	2.8E+01	c	1.1E-02	c		1.1E+00	c		6.0E+01	n	1.6E+04	n	>S		2.8E+01	c	5.4E-03	c		5.4E-01	c		3.1E+01	n	1.0E+03	n	>S	
Di-n-octyl phthalate	117-84-0	1.3E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	7.5E+05	n	1.0E+06	n	>S		1.3E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	3.9E+05	n	1.0E+06	n	>S	
Dinoseb	88-85-7	6.8E+02	n	3.5E-01	m		3.5E+01	m								6.8E+02	n	1.8E-01	m		1.8E+01	m							
Dioxane 1,4-	123-91-1	2.6E+03	c	3.6E-01	c		3.6E+01	c		4.9E+03	n	4.0E+05	n			2.4E+03	n	1.8E-01	c		1.8E+01	c		2.5E+03	n	2.6E+04	n		
Diphenyl ether	101-84-8	1.8E+03	n	2.7E+02	n		2.7E+04	n	>S	3.1E+03	n	7.7E+05	n	>S		1.1E+03	n	1.4E+02	n		1.4E+04	n	>S	1.6E+03	n	5.0E+04	n	>S	
Diphenylamine	122-39-4	4.1E+03	n	2.9E+01	n		2.9E+03	n		5.3E+03	n	1.0E+06	n	>S		2.4E+03	n	1.4E+01	n		1.4E+03	n		2.7E+03	n	7.9E+04	n	>S	
Diphenylhydrazine, 1,2-	122-66-7	2.2E+01	c	7.2E-02	c		7.2E+00	c		2.4E+02	c	1.8E+05	c	>S		2.0E+01	c	3.6E-02	c		3.6E+00	c		1.2E+02	c	1.2E+04	c		
Dipropylene glycol	110-98-5	2.1E+04	n	1.7E+01	n		1.7E+03	n		2.7E+04	n	1.0E+06	n	>S		1.2E+04	n	8.5E+00	n		8.5E+02	n		1.4E+04	n	6.3E+05	n		
Diquat	85-00-7	1.0E+02	n	2.0E-01	m		2.0E+01	m		1.1E+02	n	6.0E+05	n			5.3E+01	n	1.0E-01	m		1.0E+01	m		5.5E+01	n	2.8E+05	n		
Disodium iminodiacetate (iminodiacetic a	142-73-4	6.8E+03	n	1.4E+00	n		1.4E+02	n								6.8E+03	n	7.0E-01	n		7.0E+01	n							
Disodium iminodiacetate (iminodiacetic a	928-72-3	6.8E+03	n	1.4E+00	n		1.4E+02	n								6.8E+03	n	7.0E-01	n		7.0E+01	n							
Disulfoton	298-04-4	2.4E+01	n	1.0E+00	n		1.0E+02	n		2.1E+02	n	1.8E+05	n	>S		2.2E+01	n	5.2E-01	n		5.2E+01	n		1.1E+02	n	1.1E+04	n	>S	
Diuron	330-54-1	1.3E+03	n	2.8E+00	n		2.8E+02	n		1.6E+04	n	1.0E+06	n	>S		1.2E+03	n	1.4E+00	n		1.4E+02	n		8.0E+03	n	6.7E+05	n	>S	
Dodecylphenol, 4-	27193-86-8	3.4E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S		3.4E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S	
Dodecylphenol, 4-	104-43-8	3.4E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S		3.4E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	1.0E+06	n	1.0E+06	n	>S	
Endosulfan	115-29-7	1.1E+02	n	1.4E+01	n		1.4E+03	n	>S	1.1E+02	n	5.1E+04	n	>S		5.6E+01	n	6.9E+00	n		6.9E+02	n	>S	5.7E+01	n	3.3E+03	n	>S	
Endosulfan I	959-98-8	2.2E+02	n	9.2E+01	n		9.2E+03	n	>S	2.6E+02	n	8.0E+05	n	>S		1.2E+02	n	4.6E+01	n		4.6E+03	n	>S	1.3E+02	n	5.2E+04	n	>S	
Endosulfan II	33213-65-9	4.1E+03	n	2.8E+02	n		2.8E+04	n	>S							4.1E+03	n	1.4E+02	n		1.4E+04	n	>S						
Endosulfan sulfate	1031-07-8	4.1E+03	n	1.4E+04	n	>S	1.0E+06	n	>S							4.1E+03	n	7.0E+03	n	>S	7.0E+05	n	>S						
Endothall	145-73-3	1.4E+04	n	5.3E-01	m		5.3E+01	m								1.4E+04	n	2.7E-01	m		2.7E+01	m							
Endrin	72-20-8	1.6E+02	n	7.5E-01	m		7.5E+01	m		6.6E+02	n	1.0E+06	n	>S		1.3E+02	n	3.8E-01	m		3.8E+01	m		3.4E+02	n	1.1E+05	n	>S	
Endrin aldehyde	7421-93-4	2.0E+02	n	1.9E+03	n	>S	1.9E+05	n	>S							2.0E+02	n	9.4E+02	n	>S	9.4E+04	n	>S						
Endrin ketone	53494-70-5	1.9E+02	n	1.5E+02	n		1.5E+04	n	>S	2.6E+03	n	1.0E+06	n	>S		1.8E+02	n	7.6E+01	n		7.6E+03	n	>S	1.4E+03	n	1.0E+06	n	>S	
Endrin ketone	N-McG/D	1.9E+02	n	1.5E+02	n		1.5E+04	n	>S	2.6E+03	n	1.0E+06	n	>S		1.8E+02	n	7.6E+01	n		7.6E+03	n	>S	1.4E+03	n	1.0E+06	n	>S	
Epichlorohydrin	106-89-8	3.7E+01	n	4.1E-01	c		4.1E+01	c		3.7E+01	n	2.0E+03	n			1.9E+01	n	2.1E-01	c		2.1E+01	c		1.9E+01	n	1.3E+02	n		

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)
EPN (o-ethyl o-(4-nitrophenyl)phenylphc	2104-64-5	6.8E+00	n	1.6E-01	n	1.6E+01	n								6.8E+00	n	8.2E-02	n	8.2E+00	n							
Esfenvalerate	66230-04-4	1.4E+03	n	3.7E+02	n	>S 3.7E+04	n	>S							1.4E+03	n	1.9E+02	n	>S 1.9E+04	n	>S						
Ethalfluralin (sonolan)	55283-68-6	2.1E+02	c	5.6E+01	c	5.6E+03	c								2.1E+02	c	2.8E+01	c	2.8E+03	c							
Ethanol	64-17-5	1.2E+05	n	4.7E+03	n	4.7E+05	n		1.2E+05	n	1.0E+06	n	>S		6.3E+04	n	2.4E+03	n	2.4E+05	n		6.4E+04	n	7.7E+05	n	>S	
Ethanol, 2-amino-	141-43-5	7.6E+02	n	2.4E-01	n	2.4E+01	n		1.3E+03	n	3.7E+05	n			4.9E+02	n	1.2E-01	n	1.2E+01	n		6.9E+02	n	2.4E+04	n		
Ethanol, 2-(2-aminoethoxy)-	929-06-6	4.8E+02	n	7.0E-02	n	7.0E+00	n		8.0E+03	n	1.0E+06	n	>S		4.5E+02	n	3.5E-02	n	3.5E+00	n		4.1E+03	n	1.7E+05	n		
Ethanol, 2-(2-ethoxyethoxy)-	111-90-0	1.0E+06	n	4.9E+02	n	4.9E+04	n								1.0E+06	n	2.5E+02	n	2.5E+04	n							
Ethion	563-12-2	3.1E+02	n	2.3E+01	n	2.3E+03	n	>S	3.2E+03	n	1.0E+06	n	>S		2.8E+02	n	1.1E+01	n	1.1E+03	n	>S	1.7E+03	n	6.7E+05	n	>S	
Ethoprop	13194-48-4	6.8E+01	n	3.7E-01	n	3.7E+01	n								6.8E+01	n	1.8E-01	n	1.8E+01	n							
Ethoxy ethanol, 2-	110-80-5	4.3E+03	n	2.1E+02	n	>S 2.1E+04	n	>S	4.3E+03	n	5.1E+03	n	>S		2.2E+03	n	1.1E+02	n	>S 1.1E+04	n	>S	2.2E+03	n	3.3E+02	n	>S	
Ethyl acetate	141-78-6	3.1E+04	n	1.4E+02	n	1.4E+04	n		3.2E+04	n	1.0E+06	n	>S		1.6E+04	n	7.0E+01	n	7.0E+03	n		1.7E+04	n	6.4E+04	n		
Ethyl acrylate	140-88-5	6.0E+02	c	2.7E-01	c	2.7E+01	c		6.8E+02	n	1.9E+04	n			3.5E+02	n	1.3E-01	c	1.3E+01	c		3.5E+02	n	1.2E+03	n		
Ethyl benzene	100-41-4	1.8E+04	n	7.6E+00	m	7.6E+02	m		2.1E+04	n	2.4E+05	n	>S		1.0E+04	n	3.8E+00	m	3.8E+02	m		1.1E+04	n	1.5E+04	n	>S	
Ethyl dipropylthiocarbamate, S-	759-94-4	1.7E+04	n	2.1E+01	n	2.1E+03	n								1.7E+04	n	1.1E+01	n	1.1E+03	n							
Ethyl ether	60-29-7	2.3E+04	n	3.3E+01	n	3.3E+03	n		2.6E+04	n	2.7E+05	n	>S		1.3E+04	n	1.7E+01	n	1.7E+03	n		1.3E+04	n	1.7E+04	n		
Ethyl methacrylate	97-63-2	1.4E+04	n	2.2E+01	n	2.2E+03	n		1.6E+04	n	4.5E+05	n	>S		7.8E+03	n	1.1E+01	n	1.1E+03	n		8.5E+03	n	2.9E+04	n		
Ethyl methanesulfonate	62-50-0	9.8E+01	c	4.0E-02	c	4.0E+00	c		2.0E+02	c	6.0E+04	c			6.7E+01	c	2.0E-02	c	2.0E+00	c		1.0E+02	c	3.9E+03	c		
Ethyl tert-butyl ether (2-ethyl-2-ethoxypr	637-92-3	8.8E+02	n	2.7E-01	n	2.7E+01	n		6.4E+03	n	5.6E+04	n	>S		7.8E+02	n	1.3E-01	n	1.3E+01	n		3.3E+03	n	3.6E+03	n		
Ethyl-1-hexanol, 2-	104-76-7	3.5E+04	n	2.3E+02	n	2.3E+04	n	>S	5.3E+04	n	1.0E+06	n	>S		2.1E+04	n	1.1E+02	n	1.1E+04	n	>S	2.7E+04	n	4.9E+05	n	>S	
Ethyl-2-hexenal, 2-	645-62-5	6.3E+03	n	8.4E+01	n	8.4E+03	n	>S	6.6E+03	n	2.0E+05	n	>S		3.3E+03	n	4.2E+01	n	4.2E+03	n	>S	3.4E+03	n	1.3E+04	n	>S	
Ethyl-2-methyl benzene, 1-	611-14-3	1.1E+04	n	6.6E+02	n	6.6E+04	n	>S	1.2E+04	n	5.8E+05	n	>S		5.9E+03	n	3.3E+02	n	3.3E+04	n	>S	6.1E+03	n	3.8E+04	n	>S	
Ethyl-4-methyl benzene, 1-	622-96-8	9.6E+03	n	7.2E+02	n	7.2E+04	n	>S	1.0E+04	n	4.8E+05	n	>S		5.1E+03	n	3.6E+02	n	3.6E+04	n	>S	5.2E+03	n	3.1E+04	n	>S	
Ethylene*	74-85-1																										
Ethylene dibromide (dibromoethane, 1,2-	106-93-4	1.5E+00	c	2.1E-04	m	2.1E-02	m		1.6E+00	c	3.9E+01	c			7.9E-01	c	1.0E-04	m	1.0E-02	m		8.4E-01	c	2.5E+00	c		
Ethylene glycol	107-21-1	4.3E+03	n	2.8E+02	n	2.8E+04	n		4.3E+03	n	1.0E+06	n			2.2E+03	n	1.4E+02	n	1.4E+04	n		2.2E+03	n	7.2E+04	n		
Ethylene oxide	75-21-8	5.0E+00	c	4.0E-03	c	4.0E-01	c		6.0E+00	c	1.4E+02	c			2.8E+00	c	2.0E-03	c	2.0E-01	c		3.1E+00	c	9.2E+00	c		
Ethylene thiourea	96-45-7	5.0E+01	n	1.1E-02	n	1.1E+00	n		6.9E+02	n	1.5E+05	n	>S		4.7E+01	n	5.6E-03	n	5.6E-01	n		3.5E+02	n	9.4E+03	n		
Ethylenediamine	107-15-3	4.9E+03	n	1.4E+01	n	1.4E+03	n		5.2E+03	n	1.0E+06	n			2.6E+03	n	6.9E+00	n	6.9E+02	n		2.7E+03	n	8.7E+04	n		
Ethylenimine	151-56-4	1.5E-01	c	6.3E-05	c	6.3E-03	c		2.2E-01	c	4.7E+01	c			9.0E-02	c	3.1E-05	c	3.1E-03	c		1.1E-01	c	3.0E+00	c		
Ethylhexyl acrylate, 2-	103-11-7	4.0E+02	c	1.7E+01	c	1.7E+03	c		3.9E+03	n	7.5E+05	n	>S		4.0E+02	c	8.6E+00	c	8.6E+02	c		2.0E+03	n	4.9E+04	n	>S	
Famphur	52-85-7	1.9E+01	n	5.4E-03	n	5.4E-01	n		3.8E+02	n	1.9E+05	n	>S		1.8E+01	n	2.7E-03	n	2.7E-01	n		1.9E+02	n	3.6E+04	n	>S	
Fensulfothion	115-90-2	6.8E+02	n	1.0E+00	n	1.0E+02	n								6.8E+02	n	5.2E-01	n	5.2E+01	n							
Fenthion	55-38-9	4.8E+01	n	2.3E-01	n	2.3E+01	n								4.8E+01	n	1.2E-01	n	1.2E+01	n							
Fluoranthene	206-44-0	2.5E+04	n	5.7E+03	n	>S 5.7E+05	n	>S							2.5E+04	n	2.9E+03	n	>S 2.9E+05	n	>S						
Fluorene	86-73-7	2.5E+04	n	8.9E+02	n	>S 8.9E+04	n	>S							2.5E+04	n	4.5E+02	n	>S 4.5E+04	n	>S						
Fluorine (soluble fluoride)	7782-41-4	4.8E+04	n		m		m								4.1E+04	n		m		m							
Fluorochloridone	61213-25-0	3.9E+03	n	1.2E+01	n	1.2E+03	n		1.6E+04	n	1.0E+06	n	>S		3.2E+03	n	5.9E+00	n	5.9E+02	n		8.5E+03	n	7.3E+05	n	>S	
Fonofos	944-22-9	1.4E+03	n	2.1E+01	n	2.1E+03	n	>S							1.4E+03	n	1.1E+01	n	1.1E+03	n	>S						
Formaldehyde	50-00-0	1.4E+03	n	2.9E+01	n	2.9E+03	n		1.4E+03	n	2.4E+05	n			7.1E+02	n	1.5E+01	n	1.5E+03	n		7.1E+02	n	1.6E+04	n		
Formic acid	64-18-6	3.0E+02	n	2.8E+02	n	2.8E+04	n		3.0E+02	n	4.7E+04	n			1.5E+02	n	1.4E+02	n	1.4E+04	n		1.5E+02	n	3.1E+03	n		
Furan	110-00-9	3.8E+02	n	2.4E-01	n	2.4E+01	n		6.0E+02	n	1.9E+03	n			2.4E+02	n	1.2E-01	n	1.2E+01	n		3.1E+02	n	1.2E+02	n		
Furfural	98-01-1	6.7E+02	n	4.4E-01	n	4.4E+01	n		8.5E+02	n	1.2E+05	n			3.8E+02	n	2.2E-01	n	2.2E+01	n		4.4E+02	n	7.9E+03	n		
Glycidylaldehyde	765-34-4	1.4E+02	n	6.7E-02	n	6.7E+00	n		2.1E+02	n	4.6E+04	n			8.5E+01	n	3.3E-02	n	3.3E+00	n		1.1E+02	n	3.0E+03	n		
Glyphosate	1071-83-6	6.8E+04	n	1.3E+00	m	1.3E+02	m								6.8E+04	n	6.7E-01	m	6.7E+01	m							
Heptachlor	76-44-8	3.3E+00	c	1.9E-01	m	1.9E+01	m		1.5E+01	c	5.0E+03	c	>S		2.8E+00	c	9.4E-02	m	9.4E+00	m		7.9E+00	c	3.2E+02	c	>S	
Heptachlor epoxide	1024-57-3	2.0E+00	c	5.8E-02	m	5.8E+00	m		4.0E+01	c	5.8E+04	c	>S		1.9E+00	c	2.9E-02	m	2.9E+00	m		2.1E+01	c	3.8E+03	c	>S	
Heptane, n-	142-82-5	5.3E+04	n	2.1E+03	n	>S 2.1E+05	n	>S	3.9E+05	n	1.0E+06	n	>S		4.7E+04	n	1.1E+03	n	>S 1.1E+05	n	>S	2.0E+05	n	7.7E+04	n	>S	
Heptanoic acid, n-	111-14-8	1.7E+02	n	7.1E+01	n	7.1E+03	n	>S	1.7E+02	n	4.5E+04	n	>S		8.8E+01	n	3.5E+01	n	3.5E+03	n	>S	8.8E+01	n	2.9E+03	n	>S	
Hexachlorobenzene	118-74-1	8.7E+00	c	1.1E+00	m	1.1E+02	m	>S	3.2E+01	c	1.1E+04	c	>S		6.9E+00	c	5.6E-01	m	5.6E+01	m	>S	1.6E+01	c	7.0E+02	c	>S	

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Hexachlorobutadiene	87-68-3	4.1E+01	c	7.4E+00	c	7.4E+02	c	>S	4.9E+01	c	4.2E+03	c	>S		2.3E+01	c	3.7E+00	c	3.7E+02	c	>S	2.5E+01	c	2.7E+02	c		
Hexachlorocyclohexane, alpha (alpha-BH	319-84-6	3.3E+00	c	1.8E-02	c	1.8E+00	c		2.3E+01	c	1.4E+04	c	>S		2.9E+00	c	8.9E-03	c	8.9E-01	c		1.2E+01	c	9.1E+02	c	>S	
Hexachlorocyclohexane, beta (beta-BHC	319-85-7	1.2E+01	c	6.5E-02	c	6.5E+00	c		1.2E+02	c	1.1E+05	c	>S		1.1E+01	c	3.2E-02	c	3.2E+00	c		6.2E+01	c	7.1E+03	c	>S	
Hexachlorocyclohexane, delta (delta-BH	319-86-8	1.2E+01	c	3.9E-01	c	3.9E+01	c		1.7E+02	c	2.1E+05	c	>S		1.2E+01	c	1.9E-01	c	1.9E+01	c		8.8E+01	c	1.3E+04	c	>S	
Hexachlorocyclohexane, gamma (lindane	58-89-9	1.8E+01	c	9.2E-03	m	9.2E-01	m		8.1E+02	n	5.3E+05	n	>S		1.8E+01	c	4.6E-03	m	4.6E-01	m		4.2E+02	n	3.5E+04	n	>S	
Hexachlorocyclohexane, techn (technical	608-73-1	1.2E+01	c	1.1E-01	c	1.1E+01	c		1.5E+02	c	1.6E+05	c	>S		1.1E+01	c	5.6E-02	c	5.6E+00	c		7.7E+01	c	1.1E+04	c	>S	
Hexachlorocyclopentadiene	77-47-4	2.0E+01	n	1.9E+01	m	1.9E+03	m	>S	2.0E+01	n	2.9E+03	n	>S		1.0E+01	n	9.6E+00	m	9.6E+02	m	>S	1.0E+01	n	1.9E+02	n		
Hexachloroethane	67-72-1	6.8E+02	n	5.5E+00	n	5.5E+02	n		1.6E+03	c	1.8E+05	c	>S		5.2E+02	c	2.7E+00	n	2.7E+02	n		8.3E+02	c	1.2E+04	c	>S	
Hexachlorophene	70-30-4	2.0E+02	n	1.8E+04	n	>S	1.0E+06	n	>S						2.0E+02	n	8.8E+03	n	>S	8.8E+05	n	>S						
Hexachloropropylene	1888-71-7	6.8E+02	n	3.1E+01	n	3.1E+03	n		1.7E+03	c	3.0E+05	c	>S		5.3E+02	c	1.6E+01	n	1.6E+03	n		8.6E+02	c	1.9E+04	c	>S	
Hexanal, 2-ethyl-	123-05-7	6.4E+03	n	7.9E+01	n	7.9E+03	n	>S	6.8E+03	n	2.3E+05	n	>S		3.4E+03	n	3.9E+01	n	3.9E+03	n	>S	3.5E+03	n	1.5E+04	n	>S	
Hexane, n-	110-54-3	1.2E+04	n	6.1E+02	n	6.1E+04	n	>S	1.4E+04	n	7.4E+03	n	>S		6.6E+03	n	3.0E+02	n	3.0E+04	n	>S	7.4E+03	n	4.8E+02	n		
Hexanediamine, 1,6-	124-09-4	5.1E+02	n	7.3E-01	n	7.3E+01	n		5.7E+02	n	1.9E+05	n			2.8E+02	n	3.7E-01	n	3.7E+01	n		2.9E+02	n	1.3E+04	n		
Hexanediol, 1,6-	629-11-8	1.0E+06	n	7.8E+02	n	7.8E+04	n	>S	1.0E+06	n	1.0E+06	n	>S		1.0E+06	n	3.9E+02	n	3.9E+04	n	>S	1.0E+06	n	1.0E+06	n	>S	
Hexanoic acid	142-62-1	1.9E+02	n	9.0E+00	n	9.0E+02	n		1.9E+02	n	5.7E+04	n	>S		9.8E+01	n	4.5E+00	n	4.5E+02	n		9.8E+01	n	3.7E+03	n		
Hexanone, 2-	591-78-6	1.5E+02	n	1.2E+01	n	1.2E+03	n		1.5E+02	n	5.7E+03	n			7.9E+01	n	5.8E+00	n	5.8E+02	n		7.9E+01	n	3.7E+02	n		
Hexazinone	51235-04-2	2.4E+03	n	8.2E+00	n	8.2E+02	n		2.6E+03	n	1.0E+06	n	>S		1.3E+03	n	4.1E+00	n	4.1E+02	n		1.4E+03	n	2.1E+05	n	>S	
Hexene, 1-	592-41-6	2.7E+03	n	6.7E+02	n	6.7E+04	n	>S	2.8E+03	n	5.1E+03	n	>S		1.4E+03	n	3.4E+02	n	3.4E+04	n	>S	1.4E+03	n	3.3E+02	n	ɔW Ing	
Hexylene glycol (2-methyl-2,4-pentanedi	107-41-5	3.5E+01	n	4.4E+01	n	4.4E+03	n		3.5E+01	n	1.1E+04	n			1.8E+01	n	2.2E+01	n	2.2E+03	n		1.8E+01	n	7.2E+02	n		
Hydrazine	302-01-2	7.2E-01	c	1.3E-03	c	1.3E-01	c		7.8E-01	c	1.6E+02	c			3.8E-01	c	6.5E-04	c	6.5E-02	c		4.0E-01	c	1.1E+01	c		
Hydrocaproic acid, 6- (6-hydroxyhexano	1191-25-9	2.2E+02	n	9.1E+00	n	9.1E+02	n		2.3E+02	n	7.8E+04	n	>S		1.2E+02	n	4.5E+00	n	4.5E+02	n		1.2E+02	n	5.7E+03	n		
Hydrogen chloride (hydrochloric acid)*	7647-01-0																										
Hydroquinone	123-31-9	3.4E+02	c	7.5E-02	c	7.5E+00	c								3.4E+02	c	3.7E-02	c	3.7E+00	c							
Indene	95-13-6	1.6E+02	n	2.1E+01	n	2.1E+03	n		1.6E+02	n	5.6E+03	n			8.0E+01	n	1.1E+01	n	1.1E+03	n		8.1E+01	n	3.6E+02	n		
Indeno-1,2,3-cd-pyrene	193-39-5	2.4E+01	c	3.9E+02	c	3.9E+04	c	>S	4.2E+04	c	1.0E+06	c	>S		2.4E+01	c	1.9E+02	c	1.9E+04	c	>S	2.2E+04	c	1.0E+06	c	>S	
Iron*	7439-89-6																										
Isoamyl alcohol	123-51-3	4.4E+03	n	9.6E-01	n	9.6E+01	n		3.2E+04	n	1.0E+06	n	>S		3.9E+03	n	4.8E-01	n	4.8E+01	n		1.6E+04	n	1.6E+05	n	>S	
Isobutyl alcohol	78-83-1	9.9E+03	n	4.7E+01	n	4.7E+03	n		1.0E+04	n	8.3E+05	n	>S		5.2E+03	n	2.3E+01	n	2.3E+03	n		5.3E+03	n	5.4E+04	n		
Isobutylene (2-methyl-1-propene)	115-11-7	1.0E+06	n						1.0E+06	n	1.0E+06	n	>S		1.0E+06	n						1.0E+06	n	1.7E+05	n	>S	
Isobutyric acid (2-methylpropanoic acid)	79-31-2	1.6E+02	n	7.0E+01	n	7.0E+03	n		1.6E+02	n	4.0E+04	n			8.2E+01	n	3.5E+01	n	3.5E+03	n		8.2E+01	n	2.6E+03	n		
Isodecanol	25339-17-7	1.1E+03	n	8.8E+00	n	8.8E+02	n								1.1E+03	n	4.4E+00	n	4.4E+02	n							
Isodrin	465-73-6	1.1E-01	c	3.3E+00	c	3.3E+02	c		2.9E+00	c	1.6E+04	c	>S		1.0E-01	c	1.7E+00	c	1.7E+02	c		1.5E+00	c	1.0E+03	c		
Isophorone	78-59-1	3.7E+03	n	6.7E+00	c	6.7E+02	c		3.8E+03	n	4.5E+05	n	>S		1.9E+03	n	3.4E+00	c	3.4E+02	c		1.9E+03	n	2.9E+04	n	>S	
Isopropyl acetate	108-21-4	7.2E+04	n	1.2E+01	n	1.2E+03	n								7.2E+04	n	6.0E+00	n	6.0E+02	n							
Isopropyl alcohol	67-63-0	3.8E+04	n	3.0E+01	n	3.0E+03	n		4.7E+04	n	1.0E+06	n	>S		2.2E+04	n	1.5E+01	n	1.5E+03	n		2.4E+04	n	2.7E+05	n	>S	
Isosafrole	120-58-1	5.5E+01	c	2.9E-01	c	2.9E+01	c		1.5E+02	c	2.2E+04	c	>S		4.1E+01	c	1.5E-01	c	1.5E+01	c		7.9E+01	c	1.5E+03	c		
Kelthane (dicofol)	115-32-2	4.1E+03	n	2.2E+02	n	2.2E+04	n	>S							4.1E+03	n	1.1E+02	n	1.1E+04	n	>S						
Kepone (chlordecone)	143-50-0	2.3E+00	c	2.8E-01	c	2.8E+01	c		8.2E+01	c	4.3E+05	c	>S		2.3E+00	c	1.4E-01	c	1.4E+01	c		4.2E+01	c	2.8E+04	c	>S	
Lead (inorganic)	7439-92-1	1.6E+03	n	3.0E+00	a	>S	3.0E+02	a	>S						1.6E+03	n	1.5E+00	a	>S	1.5E+02	a	>S						
Limonene, d-*	5989-27-5																										
Lithium[5]	7439-93-2	1.9E+03	n		n			n							1.9E+03	n			n								
Magnesium*	7439-95-4																										
Malathion	121-75-5	4.6E+03	n	2.0E+01	n	2.0E+03	n	>S	7.0E+03	n	1.0E+06	n	>S		2.9E+03	n	9.8E+00	n	9.8E+02	n	>S	3.6E+03	n	2.8E+05	n	>S	
Maleic anhydride	108-31-6	2.9E+02	n	2.1E+01	n	2.1E+03	n		2.9E+02	n	6.5E+04	n	>S		1.5E+02	n	1.1E+01	n	1.1E+03	n		1.5E+02	n	4.2E+03	n	>S	
Maleic hydrazide	123-33-1	3.2E+04	n	1.1E+02	n	1.1E+04	n		3.5E+04	n	1.0E+06	n	>S		1.7E+04	n	5.3E+01	n	5.3E+03	n		1.8E+04	n	1.0E+06	n	>S	
Malononitrile	109-77-3	6.6E+01	n	1.5E-02	n	1.5E+00	n		1.7E+03	n	4.4E+05	n			6.3E+01	n	7.7E-03	n	7.7E-01	n		8.8E+02	n	2.9E+04	n		
Mancozeb	8018-01-7	2.0E+04	n	5.4E+00	n	5.4E+02	n	>S							2.0E+04	n	2.7E+00	n	2.7E+02	n	>S						
Manganese	7439-96-5	3.6E+04	n	1.0E+04	n	>S	1.0E+06	n	>S					5.0E+01	2.4E+04	n	5.1E+03	n	>S	5.1E+05	n	>S						2.5E+01
MCPA (4-(chloro-2-methylphenoxy) ace	94-74-6	3.4E+02	n	7.0E-02	n	7.0E+00	n								3.4E+02	n	3.5E-02	n	3.5E+00	n							

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
MCPP (2-(4-chloro-2-methylphenoxy) p	5-19-0/ 93-6	6.8E+02	n	1.4E-01	n	1.4E+01	n								6.8E+02	n	7.0E-02	n	7.0E+00	n							
MCPP (2-(4-chloro-2-methylphenoxy) p	93-65-2	6.8E+02	n	1.4E-01	n	1.4E+01	n								6.8E+02	n	7.0E-02	n	7.0E+00	n							
MCPP (2-(4-chloro-2-methylphenoxy) p	7085-19-0	6.8E+02	n	1.4E-01	n	1.4E+01	n								6.8E+02	n	7.0E-02	n	7.0E+00	n							
Mercuric chloride (pH = 4.9)	7487-94-7	6.2E+00	n	7.8E-03	m	7.8E-01	m	>S	6.4E+00	n	4.0E+01	n	>S		3.3E+00	n	3.9E-03	m	3.9E-01	m	>S	3.3E+00	n	2.6E+00	n	>S	
Mercuric chloride (pH = 6.8)	7487-94-7	1.9E+01	n	2.1E+00	m	2.1E+02	m	>S	2.2E+01	n	1.1E+04	n	>S		1.1E+01	n	1.0E+00	m	1.0E+02	m	>S	1.1E+01	n	6.9E+02	n	>S	
Mercury (pH = 4.9)[6]	7439-97-6	6.2E+00	n	7.8E-03	m	7.8E-01	m	>S	6.4E+00	n	4.0E+01	n	>S		3.3E+00	n	3.9E-03	m	3.9E-01	m	>S	3.3E+00	n	2.6E+00	n	>S	
Merphos	150-50-5	2.0E+01	n	1.9E+01	n	1.9E+03	n	>S							2.0E+01	n	9.7E+00	n	9.7E+02	n	>S						
Methacrylic acid (2-methyl-2-propenoic	79-41-4	2.8E+03	n	1.4E+00	n	1.4E+02	n		3.8E+03	n	3.3E+05	n	>S		1.6E+03	n	7.0E-01	n	7.0E+01	n		2.0E+03	n	2.1E+04	n		
Methacrylonitrile	126-98-7	4.3E+01	n	1.5E-02	n	1.5E+00	n		7.4E+01	n	2.9E+03	n			2.8E+01	n	7.5E-03	n	7.5E-01	n		3.8E+01	n	1.9E+02	n		
Methanol	67-56-1	1.6E+04	n	7.0E+01	n	7.0E+03	n		1.7E+04	n	1.0E+06	n			8.4E+03	n	3.5E+01	n	3.5E+03	n		8.6E+03	n	1.1E+05	n		
Methapyrilene	91-80-5	4.1E+00	c	1.2E-03	c	1.2E-01	c		1.3E+02	n	4.4E+04	n	>S		4.1E+00	c	5.9E-04	c	5.9E-02	c		6.5E+01	n	2.8E+03	n	>S	
Methomyl	16752-77-5	1.9E+03	n	1.5E+01	n	1.5E+03	n		2.1E+03	n	8.3E+05	n	>S		1.0E+03	n	7.6E+00	n	7.6E+02	n		1.1E+03	n	5.5E+04	n		
Methoxychlor	72-43-5	3.2E+03	n	1.2E+02	m	1.2E+04	m	>S	4.4E+04	n	1.0E+06	n	>S		3.0E+03	n	6.2E+01	m	6.2E+03	m	>S	2.2E+04	n	1.0E+06	n	>S	
Methoxyethanol, 2-	109-86-4	4.3E+02	n						4.3E+02	n	6.2E+02	n	>S		2.2E+02	n						2.2E+02	n	4.0E+01	n		
Methyl acetate (acetic acid, methyl ester)	79-20-9	1.3E+04	n	1.5E+02	n	1.5E+04	n		1.3E+04	n	3.7E+05	n	>S		6.6E+03	n	7.3E+01	n	7.3E+03	n		6.6E+03	n	2.4E+04	n		
Methyl acrylate	96-33-3	1.4E+02	n	3.1E-01	n	3.1E+01	n		1.5E+02	n	2.8E+03	n			7.5E+01	n	1.5E-01	n	1.5E+01	n		7.7E+01	n	1.8E+02	n		
Methyl amyl ketone (2-heptanone)	110-43-0	3.8E+04	n	1.4E+01	n	1.4E+03	n		1.6E+05	n	1.0E+06	n	>S		3.1E+04	n	7.1E+00	n	7.1E+02	n		8.0E+04	n	3.9E+05	n	>S	
Methyl chrysene, 1-	3351-28-8	2.4E+03	c	5.0E+04	c	>S 1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S		2.4E+03	c	2.5E+04	c	>S 1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	
Methyl chrysene, 2-	3351-32-4	2.4E+03	c	5.0E+04	c	>S 1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S		2.4E+03	c	2.5E+04	c	>S 1.0E+06	c	>S	1.0E+06	c	1.0E+06	c	>S	
Methyl chrysene, 6-	1705-85-7	2.4E+02	c	4.0E+03	c	>S 4.0E+05	c	>S	3.9E+05	c	1.0E+06	c	>S		2.4E+02	c	2.0E+03	c	>S 2.0E+05	c	>S	2.0E+05	c	1.0E+06	c	>S	
Methyl cyclohexane	108-87-2	6.4E+04	n	4.6E+04	n	>S 1.0E+06	n	>S	6.4E+04	n	2.5E+05	n	>S		3.3E+04	n	2.3E+04	n	>S 1.0E+06	n	>S	3.3E+04	n	1.6E+04	n	>S	
Methyl ethyl ketone (2-butanone)	78-93-3	1.3E+05	n	8.7E+01	n	8.7E+03	n		1.6E+05	n	1.0E+06	n	>S		7.3E+04	n	4.4E+01	n	4.4E+03	n		8.2E+04	n	4.9E+05	n	>S	
Methyl iodide (iodomethane)	74-88-4	2.2E+02	n	3.4E-01	n	3.4E+01	n		2.6E+02	n	7.9E+02	n			1.2E+02	n	1.7E-01	n	1.7E+01	n		1.3E+02	n	5.1E+01	n		
Methyl isobutyl ketone (4-methyl-2-pent	108-10-1	4.1E+04	n	1.5E+01	n	1.5E+03	n		8.1E+04	n	1.0E+06	n	>S		2.8E+04	n	7.4E+00	n	7.4E+02	n		4.2E+04	n	1.5E+05	n	>S	
Methyl mercury	22967-92-6	9.7E+01	n		n		n								9.6E+01	n		n		n							
Methyl methacrylate	80-62-6	1.5E+04	n	2.9E+02	n	2.9E+04	n		1.5E+04	n	3.2E+05	n	>S		7.7E+03	n	1.5E+02	n	1.5E+04	n		7.7E+03	n	2.0E+04	n		
Methyl methanesulfonate	66-27-3	9.5E+01	c	4.0E-02	c	4.0E+00	c		1.9E+02	c	5.4E+04	c			6.4E+01	c	2.0E-02	c	2.0E+00	c		9.7E+01	c	3.5E+03	c		
Methyl parathion	298-00-0	1.1E+02	n	5.1E-01	n	5.1E+01	n		2.9E+02	n	1.7E+05	n	>S		8.0E+01	n	2.5E-01	n	2.5E+01	n		1.5E+02	n	1.1E+04	n	>S	
Methyl-1-butene, 2-	563-46-2	5.3E+04	n	1.9E+02	n	1.9E+04	n	>S	3.9E+05	n	4.8E+05	n	>S		4.7E+04	n	9.7E+01	n	9.7E+03	n	>S	2.0E+05	n	3.1E+04	n	>S	
Methyl-1-propanal, 2- (isobutyraldehyde)	78-84-2	5.4E+03	n	6.2E+00	n	6.2E+02	n		6.2E+03	n	1.3E+05	n	>S		3.0E+03	n	3.1E+00	n	3.1E+02	n		3.2E+03	n	8.6E+03	n		
Methyl-2-butene, 2-	513-35-9	5.3E+04	n	1.2E+02	n	1.2E+04	n	>S	3.9E+05	n	5.5E+05	n	>S		4.7E+04	n	5.8E+01	n	5.8E+03	n	>S	2.0E+05	n	3.6E+04	n	>S	
Methyl-2-pentenal, 2-	623-36-9	1.5E+01	c	3.3E-03	c	3.3E-01	c		1.3E+02	n	3.1E+03	n			1.5E+01	c	1.6E-03	c	1.6E-01	c		6.8E+01	n	2.0E+02	n		
Methyl-5-nitroaniline, 2- (5-nitro-o-toluic	99-55-8	5.8E+02	c	3.2E-01	c	3.2E+01	c								5.8E+02	c	1.6E-01	c	1.6E+01	c							
Methylcholanthrene, 3-	56-49-5	7.9E-01	c	3.4E+01	c	3.4E+03	c	>S	3.0E+03	c	1.0E+06	c	>S		7.9E-01	c	1.7E+01	c	1.7E+03	c	>S	1.5E+03	c	1.0E+06	c	>S	
Methylene bromide (dibromomethane)	74-95-3	3.8E+02	n	2.5E+00	c	2.5E+02	c		3.8E+02	n	1.0E+04	n			1.9E+02	n	1.3E+00	c	1.3E+02	c		1.9E+02	n	6.6E+02	n		
Methylene chloride (dichloromethane)	75-09-2	9.6E+02	c	1.3E-02	m	1.3E+00	m		1.3E+03	c	5.6E+03	c			5.6E+02	c	6.5E-03	m	6.5E-01	m		6.6E+02	c	3.6E+02	c		
Methylene-bis (2-chloroaniline) 4,4'-	101-14-4	1.8E+02	c	6.5E+00	c	6.5E+02	c		4.5E+03	c	1.0E+06	c	>S		1.8E+02	c	3.2E+00	c	3.2E+02	c		2.3E+03	c	6.9E+05	c	>S	
Methylmecury hydroxide	1184-57-2	1.6E+00	n	1.4E-02	n	1.4E+00	n		1.6E+00	n	4.0E+02	n			8.3E-01	n	7.1E-03	n	7.1E-01	n		8.4E-01	n	2.8E+01	n		
Methylnaphthalene, 1-	90-12-0	6.0E+02	c	6.6E+00	c	6.6E+02	c								6.0E+02	c	3.3E+00	c	3.3E+02	c							
Methylnaphthalene, 2-	91-57-6	2.5E+03	n	5.1E+01	n	5.1E+03	n	>S							2.5E+03	n	2.5E+01	n	2.5E+03	n	>S						
Methylpyrrolidone, N-	872-50-4	7.4E+03	n	2.9E+00	n	2.9E+02	n		1.6E+04	n	1.0E+06	n			5.2E+03	n	1.4E+00	n	1.4E+02	n		8.4E+03	n	3.2E+05	n		
Methyltetrahydrofuran, 2-	96-47-9	2.9E+02	c	6.2E-01	c	6.2E+01	c		3.2E+02	c	7.0E+03	c			1.6E+02	c	3.1E-01	c	3.1E+01	c		1.6E+02	c	4.5E+02	c		
Methyltetrahydropyran, 2-	10141-72-7	3.3E+02	c	7.3E-01	c	7.3E+01	c		3.7E+02	c	9.6E+03	c			1.8E+02	c	3.6E-01	c	3.6E+01	c		1.9E+02	c	6.2E+02	c		
Metolachlor	51218-45-2	1.0E+05	n	3.3E+02	n	3.3E+04	n	>S							1.0E+05	n	1.6E+02	n	1.6E+04	n	>S						
Metribuzin	21087-64-9	1.7E+04	n	3.7E+00	n	3.7E+02	n								1.7E+04	n	1.8E+00	n	1.8E+02	n							
Mirex	2385-85-5	1.4E+02	n	1.3E+04	n	>S 1.0E+06	n	>S							1.4E+02	n	6.7E+03	n	>S 6.7E+05	n	>S						
Molinate	2212-67-1	1.4E+03	n	5.7E-01	n	5.7E+01	n								1.4E+03	n	2.9E-01	n	2.9E+01	n							
Molybdenum	7439-98-7	4.5E+03	n	1.5E+02	n	>S 1.5E+04	n	>S							4.5E+03	n	7.3E+01	n	>S 7.3E+03	n	>S						
Monocrotophos	2157-98-4	5.8E+01	n	8.8E-02	n	8.8E+00	n		6.7E+01	n	6.1E+05	n			3.2E+01	n	4.4E-02	n	4.4E+00	n		3.5E+01	n	3.0E+05	n		

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)		$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	$^{GW}Soil$ for Secondary MCL (mg/kg)	
Morphine	110-91-8	2.0E+02	n	7.1E+04	n	1.0E+06	n	2.0E+02	n	5.6E+04	n	iW Ing		1.0E+02	n	3.6E+04	n	1.0E+06	n	1.0E+02	n	3.7E+03	n	iW Ing	
MTBE (methyl tert-butyl ether)[7]	1634-04-4	2.0E+03	c	1.9E+00	n	1.9E+02	n	2.3E+03	c	1.7E+04	c		3.8E-02	1.1E+03	c	9.3E-01	n	9.3E+01	n	1.2E+03	c	1.1E+03	c		1.9E-02
Naled	300-76-5	2.8E+02	n	1.1E+00	n	1.1E+02	n	>S 3.6E+02	n	2.2E+04	n	>S		1.6E+02	n	5.3E-01	n	5.3E+01	n	>S 1.8E+02	n	1.4E+03	n	>S	
Naphthalene	91-20-3	3.6E+02	n	9.3E+01	n	9.3E+03	n	>S 3.7E+02	n	2.8E+04	n	>S		1.9E+02	n	4.7E+01	n	4.7E+03	n	>S 1.9E+02	n	1.8E+03	n	>S	
Naphthoquinone, 1,4-	130-15-4	2.7E+01	n	1.4E+00	n	1.4E+02	n	2.7E+01	n	6.1E+03	n	>S		1.4E+01	n	6.9E-01	n	6.9E+01	n	1.4E+01	n	4.0E+02	n	>S	
Naphthylamine, 1-	134-32-7	1.4E+04	n	2.8E+01	n	2.8E+03	n							1.4E+04	n	1.4E+01	n	1.4E+03	n						
Naphthylamine, 2-	91-59-8	1.1E+01	c	2.9E-02	c	2.9E+00	c							1.1E+01	c	1.4E-02	c	1.4E+00	c						
Napropamide	15299-99-7	6.8E+04	n	1.6E+03	n	1.6E+05	n	>S						6.8E+04	n	8.2E+02	n	8.2E+04	n	>S					
Neopentyl glycol	126-30-7	2.0E+05	n	4.4E+01	n	4.4E+03	n							2.0E+05	n	2.2E+01	n	2.2E+03	n						
Nickel and compounds	7440-02-0	8.5E+03	n	4.7E+02	n	>S 4.7E+04	n	>S						7.9E+03	n	2.3E+02	n	>S 2.3E+04	n	>S					
Nitrate	14797-55-8	1.0E+06	n	1.9E+01	m	1.9E+03	m							1.0E+06	n	9.6E+00	m	9.6E+02	m						
Nitrite	14797-65-0	9.7E+04	n		m		m							9.7E+04	n		m		m						
Nitroaniline, 2-	88-74-4	5.0E+01	n	6.6E-02	n	6.6E+00	n	6.7E+01	n	1.7E+04	n	>S		2.9E+01	n	3.3E-02	n	3.3E+00	n	3.4E+01	n	1.1E+03	n		
Nitroaniline, 3-	99-09-2	1.8E+02	n	7.6E-02	n	7.6E+00	n	1.3E+03	n	3.5E+05	n	>S		1.6E+02	n	3.8E-02	n	3.8E+00	n	6.4E+02	n	2.3E+04	n	>S	
Nitroaniline, 4-	100-01-6	9.5E+02	c	2.4E-01	c	2.4E+01	c	1.7E+03	n	4.7E+05	n	>S		6.6E+02	n	1.2E-01	c	1.2E+01	c	8.7E+02	n	3.1E+04	n	>S	
Nitrobenzene	98-95-3	1.1E+02	c	1.0E+00	n	1.0E+02	n	1.1E+02	c	8.7E+03	c			5.7E+01	c	5.2E-01	n	5.2E+01	n	5.7E+01	c	5.6E+02	c		
Nitroglycerin	55-63-0	6.8E+01	n	4.1E-02	n	4.1E+00	n							6.8E+01	n	2.1E-02	n	2.1E+00	n						
Nitrophenol, 2-	88-75-5	6.2E+02	n	4.0E-01	n	4.0E+01	n	1.1E+03	n	2.6E+05	n	>S		4.1E+02	n	2.0E-01	n	2.0E+01	n	5.8E+02	n	1.7E+04	n		
Nitrophenol, 3-	554-84-7	8.3E+02	n	6.8E-01	n	6.8E+01	n	2.1E+03	n	1.0E+06	n	>S		6.0E+02	n	3.4E-01	n	3.4E+01	n	1.1E+03	n	7.6E+05	n	>S	
Nitrophenol, 4-	100-02-7	1.9E+02	n	3.0E-01	n	3.0E+01	n	2.3E+02	n	6.8E+04	n	>S		1.1E+02	n	1.5E-01	n	1.5E+01	n	1.2E+02	n	4.4E+03	n		
Nitropropane, 2-	79-46-9	2.2E-01	c	2.1E-02	n	2.1E+00	n	2.2E-01	c	6.0E+00	c			1.1E-01	c	1.1E-02	n	1.1E+00	n	1.1E-01	c	3.9E-01	c		
Nitroquinoline-N-oxide, 4-	56-57-5	1.2E+00	c	5.2E-04	c	5.2E-02	c	3.2E+00	c	4.5E+04	c			9.0E-01	c	2.6E-04	c	2.6E-02	c	1.6E+00	c	2.2E+04	c		
Nitrosodiethanolamine	1116-54-7	6.8E+00	c	1.5E-03	c	1.5E-01	c							6.8E+00	c	7.4E-04	c	7.4E-02	c						
Nitrosodiethylamine, n-	55-18-5	7.0E-02	c	2.8E-05	c	2.8E-03	c	1.1E-01	c	2.5E+01	c			4.4E-02	c	1.4E-05	c	1.4E-03	c	5.7E-02	c	1.6E+00	c		
Nitrosodimethylamine, n-	62-75-9	2.1E-01	c	8.3E-05	c	8.3E-03	c	3.3E-01	c	7.0E+01	c			1.3E-01	c	4.1E-05	c	4.1E-03	c	1.7E-01	c	4.5E+00	c		
Nitrosodi-n-butylamine, n-	924-16-3	1.2E+00	c	4.2E-03	c	4.2E-01	c	1.7E+00	c	8.8E+01	c			7.1E-01	c	2.1E-03	c	2.1E-01	c	9.0E-01	c	5.7E+00	c		
Nitrosodi-n-propylamine, n-	621-64-7	1.4E+00	c	7.9E-04	c	7.9E-02	c							1.4E+00	c	3.9E-04	c	3.9E-02	c						
Nitrosodiphenylamine	86-30-6	1.9E+03	c	6.3E+00	c	6.3E+02	c	>S						1.9E+03	c	3.2E+00	c	3.2E+02	c	>S					
Nitroso-methyl-ethyl-amine, n-	10595-95-6	1.3E+00	c	2.6E-04	c	2.6E-02	c							1.3E+00	c	1.3E-04	c	1.3E-02	c						
Nitrosomorpholine, N-	59-89-2	1.4E+00	c	5.9E-04	c	5.9E-02	c	2.9E+00	c	8.8E+02	c			9.7E-01	c	2.9E-04	c	2.9E-02	c	1.5E+00	c	5.7E+01	c		
Nitroso-n-ethylurea, n-	759-73-9	1.4E-01	c	4.7E-05	c	4.7E-03	c							1.4E-01	c	2.3E-05	c	2.3E-03	c						
Nitrosopiperidine, N-	100-75-4	1.1E+00	c	4.6E-04	c	4.6E-02	c	2.2E+00	c	5.9E+02	c			7.4E-01	c	2.3E-04	c	2.3E-02	c	1.2E+00	c	3.8E+01	c		
Nitrosopyrrolidine, n-	930-55-2	4.7E+00	c	1.9E-03	c	1.9E-01	c	9.8E+00	c	3.1E+03	c			3.2E+00	c	9.5E-04	c	9.5E-02	c	5.0E+00	c	2.0E+02	c		
Nitrotoluene, m-	99-08-1	1.0E+03	n	5.5E+00	n	5.5E+02	n	1.2E+03	n	7.0E+04	n	>S		5.7E+02	n	2.8E+00	n	2.8E+02	n	6.3E+02	n	4.5E+03	n	>S	
Nitrotoluene, o-	88-72-2	8.7E+01	c	7.0E-02	c	7.0E+00	c	1.3E+03	n	8.2E+04	n	>S		8.7E+01	c	3.5E-02	c	3.5E+00	c	6.8E+02	n	5.3E+03	n	>S	
Nitrotoluene, p-	99-99-0	8.4E+02	n	9.6E-01	c	9.6E+01	c	1.2E+03	n	6.9E+04	n	>S		5.1E+02	n	4.8E-01	c	4.8E+01	c	6.2E+02	n	4.4E+03	n	>S	
Nonachlor, cis-	5103-73-1	5.3E+01	c	2.8E+01	c	2.8E+03	c	>S 2.1E+03	c	1.0E+06	c	>S		5.2E+01	c	1.4E+01	c	1.4E+03	c	>S 1.1E+03	c	4.0E+05	c	>S	
Nonachlor, trans-	39765-80-5	5.3E+01	c	2.8E+01	c	2.8E+03	c	>S 2.1E+03	c	1.0E+06	c	>S		5.2E+01	c	1.4E+01	c	1.4E+03	c	>S 1.1E+03	c	4.0E+05	c	>S	
Nonanal	124-19-6	1.4E+05	n	4.4E+02	n	4.4E+04	n	>S						1.4E+05	n	2.2E+02	n	2.2E+04	n	>S					
Nonene, 1-n	124-11-8	2.1E+02	n	9.9E+03	n	>S 9.9E+05	n	>S 2.1E+02	n	2.0E+03	n	>S		1.1E+02	n	4.9E+03	n	>S 4.9E+05	n	>S 1.1E+02	n	1.3E+02	n	iW Ing	
Nonylphenol	104-40-5	6.7E+04	n	8.8E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S		6.5E+04	n	4.4E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S	
Nonylphenol	25154-52-3	6.7E+04	n	8.8E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S		6.5E+04	n	4.4E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S	
Nonylphenol	84852-15-3	6.7E+04	n	8.8E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S		6.5E+04	n	4.4E+05	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S	
Nonylphenol ethoxylate	9016-45-9	9.9E+04	n	1.0E+06	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S		9.6E+04	n	1.0E+06	n	>S 1.0E+06	n	>S 1.0E+06	n	1.0E+06	n	>S	
Octamethylpyrophosphoramide	152-16-9	1.4E+03	n	2.8E-01	n	2.8E+01	n							1.4E+03	n	1.4E-01	n	1.4E+01	n						
Octanone	106-68-3	5.8E+04	n	3.3E+01	n	3.3E+03	n	1.0E+06	n	1.0E+06	n	>S		5.6E+04	n	1.6E+01	n	1.6E+03	n	6.5E+05	n	1.0E+06	n	>S	
Oxamyl	23135-22-0	1.7E+04	n	4.2E-01	m	4.2E+01	m							1.7E+04	n	2.1E-01	m	2.1E+01	m						
Oxychlordane	27304-13-8	5.3E+01	c	2.8E+01	c	2.8E+03	c	>S 2.1E+03	c	1.0E+06	c	>S		5.2E+01	c	1.4E+01	c	1.4E+03	c	>S 1.1E+03	c	4.0E+05	c	>S	
Paraquat	1910-42-5	3.1E+03	n	6.3E-01	n	6.3E+01	n							3.1E+03	n	3.1E-01	n	3.1E+01	n						

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		^{GW}Soil for Secondary MCL (mg/kg)
Parathion (ethyl parathion)	56-38-2	2.3E+02	n	9.9E+01	n	9.9E+03	n	>S	2.5E+02	n	4.8E+05	n	>S		1.2E+02	n	4.9E+01	n	4.9E+03	n	>S	1.3E+02	n	3.1E+04	n	>S	
Pebulate	1114-71-2	3.4E+04	n	7.0E+01	n	7.0E+03	n	>S							3.4E+04	n	3.5E+01	n	3.5E+03	n	>S						
Pendimethalin	40487-42-1	2.7E+04	n	2.2E+04	n	1.0E+06	n	>S							2.7E+04	n	1.1E+04	n	1.0E+06	n	>S						
Pentachlorobenzene	608-93-5	5.4E+02	n	7.4E+01	n	7.4E+03	n	>S	4.2E+04	n	1.0E+06	n	>S		5.3E+02	n	3.7E+01	n	3.7E+03	n	>S	2.2E+04	n	8.9E+05	n	>S	
Pentachloroethane	76-01-7	1.1E+02	c	2.2E-01	c	2.2E+01	c		1.6E+02	c	4.8E+03	c			6.5E+01	c	1.1E-01	c	1.1E+01	c		8.1E+01	c	3.1E+02	c		
Pentachloronitrobenzene	82-68-8	7.3E+01	c	4.1E+00	c	4.1E+02	c	>S	3.1E+02	n	9.0E+04	n	>S		7.3E+01	c	2.1E+00	c	2.1E+02	c	>S	1.6E+02	n	5.8E+03	n	>S	
Pentachlorophenol	87-86-5	1.1E+02	c	1.8E-02	m	1.8E+00	m		6.3E+02	n	3.4E+05	n	>S		1.1E+02	c	9.2E-03	m	9.2E-01	m		3.3E+02	n	2.2E+04	n	>S	
Pentadiene, 1,3-trans-	2004-70-8	5.3E+04	n	3.9E+01	n	3.9E+03	n		3.9E+05	n	9.3E+05	n	>S		4.7E+04	n	1.9E+01	n	1.9E+03	n		2.0E+05	n	6.0E+04	n	>S	
Pentaerythritol tetranitrate (PETN)	78-11-5	2.7E+05	n	7.4E+03	n	7.4E+05	n	>S							2.7E+05	n	3.7E+03	n	3.7E+05	n	>S						
Pentane	109-66-0	7.4E+03	n	1.2E+04	n	1.0E+06	n	>S	7.5E+03	n	1.6E+03	n	iW Ing		3.8E+03	n	6.0E+03	n	6.0E+05	n	>S	3.9E+03	n	1.1E+02	n	iW Ing	
Pentane, 2-methyl-	107-83-5	5.3E+04	n	1.1E+03	n	1.1E+05	n	>S	3.9E+05	n	6.4E+05	n	>S		4.7E+04	n	5.7E+02	n	5.7E+04	n	>S	2.0E+05	n	4.1E+04	n	>S	
Pentane, 3-methyl-	96-14-0	5.3E+04	n	9.3E+02	n	9.3E+04	n	>S	3.9E+05	n	6.6E+05	n	>S		4.7E+04	n	4.7E+02	n	4.7E+04	n	>S	2.0E+05	n	4.3E+04	n	>S	
Pentanediol, 1,5-	111-29-5	1.0E+06	n	7.2E+02	n	7.2E+04	n		1.0E+06	n	1.0E+06	n	>S		1.0E+06	n	3.6E+02	n	3.6E+04	n		1.0E+06	n	1.0E+06	n	>S	
Pentanol, 1-	71-41-0	2.4E+04	n	6.8E+00	n	6.8E+02	n		8.5E+04	n	1.0E+06	n	>S		1.9E+04	n	3.4E+00	n	3.4E+02	n		4.3E+04	n	4.1E+05	n	>S	
Pentanol, 4-methyl-2-	108-11-2	6.0E+03	n	5.3E+00	n	5.3E+02	n		7.8E+03	n	5.1E+05	n	>S		3.5E+03	n	2.6E+00	n	2.6E+02	n		4.0E+03	n	3.3E+04	n	>S	
Pentanone, 2-	107-87-9	1.2E+04	n	6.6E+00	n	6.6E+02	n		1.7E+04	n	7.1E+05	n	>S		7.3E+03	n	3.3E+00	n	3.3E+02	n		8.9E+03	n	4.6E+04	n		
Pentyne, 1-	627-19-0	5.3E+04	n	3.8E+01	n	3.8E+03	n		3.9E+05	n	8.7E+05	n	>S		4.7E+04	n	1.9E+01	n	1.9E+03	n		2.0E+05	n	5.6E+04	n	>S	
Perchlorate	14797-73-0	5.7E+02	n	4.2E-01	n	4.2E+01	n								5.7E+02	n	2.1E-01	n	2.1E+01	n							
Perylene	198-55-0	1.4E+04	n	2.3E+05	n	1.0E+06	n	>S							1.4E+04	n	1.1E+05	n	1.0E+06	n	>S						
Phenacetin	62-44-2	5.9E+03	c	2.8E+00	c	2.8E+02	c		1.8E+04	c	1.0E+06	c	>S		4.5E+03	c	1.4E+00	c	1.4E+02	c		9.4E+03	c	3.8E+05	c	>S	
Phenanthrene	85-01-8	1.9E+04	n	1.2E+03	n	1.2E+05	n	>S							1.9E+04	n	6.2E+02	n	6.2E+04	n	>S						
Phenanthridine	229-87-8	2.0E+03	n	1.6E+01	n	1.6E+03	n								2.0E+03	n	7.9E+00	n	7.9E+02	n							
Phenol	108-95-2	4.6E+03	n	5.7E+01	n	5.7E+03	n		4.7E+03	n	1.0E+06	n	>S		2.4E+03	n	2.9E+01	n	2.9E+03	n		2.4E+03	n	6.5E+04	n		
Phenol, 4-tert-butyl-	98-54-4	2.7E+03	n	1.3E+01	n	1.3E+03	n		1.3E+04	n	1.0E+06	n	>S		2.2E+03	n	6.7E+00	n	6.7E+02	n		6.6E+03	n	4.3E+05	n	>S	
Phenothiazine	92-84-2	7.3E+02	n	2.4E+01	n	2.4E+03	n	>S	2.9E+04	n	1.0E+06	n	>S		7.1E+02	n	1.2E+01	n	1.2E+03	n	>S	1.5E+04	n	1.0E+06	n	>S	
Phenyl mercuric acetate	62-38-4	5.5E+01	n	4.9E-02	n	4.9E+00	n								5.5E+01	n	2.4E-02	n	2.4E+00	n							
Phenylene diamine, m-	108-45-2	1.9E+01	n	8.6E-01	n	8.6E+01	n		2.0E+01	n	5.6E+03	n			1.0E+01	n	4.3E-01	n	4.3E+01	n		1.0E+01	n	3.6E+02	n		
Phenylene diamine, p-	106-50-3	2.1E+01	n	2.7E+01	n	2.7E+03	n		2.1E+01	n	6.3E+03	n			1.1E+01	n	1.4E+01	n	1.4E+03	n		1.1E+01	n	4.1E+02	n		
Phorate	298-02-2	4.2E+01	n	3.2E+00	n	3.2E+02	n		6.1E+01	n	3.0E+04	n	>S		2.6E+01	n	1.6E+00	n	1.6E+02	n		3.2E+01	n	2.0E+03	n		
Phosalone	2310-17-0	1.4E+03	n	7.0E+00	n	7.0E+02	n								1.4E+03	n	3.5E+00	n	3.5E+02	n							
Phosdrin (mevinphos)	7786-34-7	1.7E+01	n	3.5E-03	n	3.5E-01	n								1.7E+01	n	1.8E-03	n	1.8E-01	n							
Phosmet	732-11-6	1.7E+03	n	1.2E+01	n	1.2E+03	n		1.9E+03	n	8.9E+05	n	>S		9.3E+02	n	6.1E+00	n	6.1E+02	n		1.0E+03	n	5.8E+04	n	>S	
Phosphine	7803-51-2	6.3E+00	n		n		n		6.4E+00	n		n	iW Ing		3.3E+00	n		n		n		3.3E+00	n		n	iW Ing	
Phosphorotrithioic acid, S,S,S-tributyl est	78-48-8	3.4E+02	c	9.7E+02	c	9.7E+04	c	>S							3.4E+02	c	4.8E+02	c	4.8E+04	c	>S						
Phosphorus, total*	7723-14-0																										
Phosphorus, white	7723-14-0	1.9E+00	n	6.9E-02	n	6.9E+00	n		2.1E+00	n					1.0E+00	n	3.4E-02	n	3.4E+00	n		1.1E+00	n				
Phthalic anhydride	85-44-9	6.6E+04	n	7.4E+02	n	7.4E+04	n	>S	7.0E+04	n	1.0E+06	n	>S		3.5E+04	n	3.7E+02	n	3.7E+04	n	>S	3.6E+04	n	1.0E+06	n	>S	
Picloram	1918-02-1	4.8E+04	n	9.8E-01	m	9.8E+01	m								4.8E+04	n	4.9E-01	m	4.9E+01	m							
Picoline, 2- (2-methylpyridine)	109-06-8	2.4E+01	n	1.7E+00	n	1.7E+02	n		2.4E+01	n	1.7E+03	n			1.2E+01	n	8.4E-01	n	8.4E+01	n		1.2E+01	n	1.1E+02	n		
Polybrominated biphenyls (PBBs)	67774-32-7	2.1E+00	c	2.0E-02	c	2.0E+00	c	>S							2.1E+00	c	1.0E-02	c	1.0E+00	c	>S						
Polychlorinated biphenyls (PCBs)	1336-36-3	7.7E+00	c	1.1E+01	m	1.1E+03	m		9.1E+01	c	1.0E+05	c	>S		7.1E+00	c	5.3E+00	m	5.3E+02	m		4.7E+01	c	6.8E+03	c	>S	
Potassium*	7440--09-27																										
Primene	68955-53-3	1.6E+03	n	1.6E+02	n	1.6E+04	n		2.6E+03	n	4.4E+05	n	>S		1.0E+03	n	8.1E+01	n	8.1E+03	n		1.3E+03	n	2.8E+04	n	>S	
Prometon (pramitol)	1610-18-0	1.0E+04	n	2.9E+01	n	2.9E+03	n	>S							1.0E+04	n	1.4E+01	n	1.4E+03	n	>S						
Pronamide	23950-58-5	5.1E+04	n	5.4E+01	n	5.4E+03	n	>S							5.1E+04	n	2.7E+01	n	2.7E+03	n	>S						
Propanal (propionaldehyde)	123-38-6	1.7E+02	n	1.2E+00	n	1.2E+02	n		1.7E+02	n	4.6E+03	n			8.7E+01	n	5.9E-01	n	5.9E+01	n		8.8E+01	n	3.0E+02	n		
Propane, 1-bromo-	106-94-5	1.0E+03	n	1.0E+01	n	1.0E+03	n		1.1E+03	n	6.2E+03	n			5.4E+02	n	5.1E+00	n	5.1E+02	n		5.5E+02	n	4.0E+02	n		
Propanil	709-98-8	3.4E+03	n	1.4E+01	n	1.4E+03	n								3.4E+03	n	6.9E+00	n	6.9E+02	n							
Propanoic acid (propionic acid)	79-09-4	1.6E+02	n	7.0E+01	n	7.0E+03	n		1.6E+02	n	4.0E+04	n			8.2E+01	n	3.5E+01	n	3.5E+03	n		8.2E+01	n	2.6E+03	n		

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Propanol, 1-	71-23-8	2.7E+04	n	3.0E+01	n		3.0E+03	n		3.1E+04	n	1.0E+06	n	>S		1.5E+04	n	1.5E+01	n		1.5E+03	n		1.6E+04	n	1.6E+05	n	>S	
Propargite	2312-35-8	1.4E+04	n	3.3E+02	n	>S	3.3E+04	n	>S							1.4E+04	n	1.6E+02	n	>S	1.6E+04	n	>S						
Propargyl alcohol	107-19-7	3.4E+02	n	3.1E-01	n		3.1E+01	n		4.1E+02	n	8.9E+04	n			1.9E+02	n	1.6E-01	n		1.6E+01	n		2.1E+02	n	5.7E+03	n		
Propazine	139-40-2	4.3E+02	c	2.1E+00	c		2.1E+02	c								4.3E+02	c	1.1E+00	c		1.1E+02	c							
Propham	122-42-9	1.4E+04	n	5.8E+00	n		5.8E+02	n								1.4E+04	n	2.9E+00	n		2.9E+02	n							
Propionitrile (propane nitrile)	107-12-0	2.0E+02	n	5.8E-02	n		5.8E+00	n		3.8E+02	n	2.1E+04	n			1.3E+02	n	2.9E-02	n		2.9E+00	n		2.0E+02	n	1.4E+03	n		
Propyl acetate, n-	109-60-4	9.2E+04	n	1.6E+01	n		1.6E+03	n								9.2E+04	n	7.9E+00	n		7.9E+02	n							
Propylbenzene, n-	103-65-1	7.3E+03	n	1.3E+02	n		1.3E+04	n	>S	8.9E+03	n	3.9E+05	n	>S		4.1E+03	n	6.7E+01	n		6.7E+03	n	>S	4.6E+03	n	2.5E+04	n	>S	
Propylene glycol	57-55-6	2.7E+04	n	2.8E+03	n		2.8E+05	n	>S	2.7E+04	n	1.0E+06	n	>S		1.4E+04	n	1.4E+03	n		1.4E+05	n	>S	1.4E+04	n	4.6E+05	n	>S	
Propylene glycol monomethyl ether	107-98-2	2.2E+05	n	9.9E+01	n		9.9E+03	n		3.2E+05	n	1.0E+06	n	>S		1.3E+05	n	5.0E+01	n		5.0E+03	n		1.7E+05	n	1.0E+06	n	>S	
Propylene oxide	75-56-9	6.9E+01	c	1.7E-02	c		1.7E+00	c		1.6E+02	c	5.3E+03	c			4.9E+01	c	8.4E-03	c		8.4E-01	c		8.4E+01	c	3.4E+02	c		
Propylene tetramer	6842-15-5	1.6E+04	n	7.6E+04	n	>S	1.0E+06	n	>S	2.1E+04	n	6.4E+05	n	>S		9.5E+03	n	3.8E+04	n	>S	1.0E+06	n	>S	1.1E+04	n	4.1E+04	n	>S	
Prothiofos (Tokuthion)	34643-46-4	6.8E+01	n	7.2E+03	n	>S	7.2E+05	n	>S	1.1E+05	n	1.0E+06	n	>S		6.8E+01	n	3.6E+03	n	>S	3.6E+05	n	>S	5.8E+04	n	1.0E+06	n	>S	
Pyrene	129-00-0	1.9E+04	n	3.3E+03	n	>S	3.3E+05	n	>S							1.9E+04	n	1.7E+03	n	>S	1.7E+05	n	>S						
Pyridine	110-86-1	2.5E+02	n	2.1E-01	n		2.1E+01	n		3.2E+02	n	8.8E+02	n	>S		1.4E+02	n	1.0E-01	n		1.0E+01	n		1.7E+02	n	5.7E+01	n		
Quinoline	91-22-5	6.4E+00	c	1.7E-02	c		1.7E+00	c		4.2E+02	n	1.5E+05	n			6.4E+00	c	8.4E-03	c		8.4E-01	c		2.2E+02	n	9.6E+03	n		
Ronnel	299-84-3	3.4E+04	n	1.2E+03	n	>S	1.2E+05	n	>S							3.4E+04	n	6.2E+02	n	>S	6.2E+04	n	>S						
Safrole	94-59-7	4.9E+01	c	3.7E-01	c		3.7E+01	c		1.1E+02	c	1.3E+04	c	>S		3.5E+01	c	1.8E-01	c		1.8E+01	c		5.8E+01	c	8.1E+02	c		
Selenium	7782-49-2	4.8E+03	n	2.3E+00	m	>S	2.3E+02	m	>S							4.7E+03	n	1.1E+00	m	>S	1.1E+02	m	>S						
Selenourea	630-10-4	5.1E+03	n		n			n								5.1E+03	n		n			n							
Silver	7440-22-4	1.9E+03	n	1.4E+00	n	>S	1.4E+02	n	>S						3.9E-01	1.7E+03	n	7.1E-01	n	>S	7.1E+01	n	>S						2.0E-01
Simazine	122-34-9	1.6E+02	c	5.5E-02	m		5.5E+00	m								1.6E+02	c	2.8E-02	m		2.8E+00	m							
Sodium*	7440-23-5																												
Sodium diethyldithiocarbamate	148-18-5	1.1E+02	c		c			c								1.1E+02	c		c			c							
Sodium hypochlorite	7681-52-9	1.6E+05	n		n			n								1.5E+05	n		n			n							
Sodium polyacrylate	9003-04-7	1.7E+02	n	7.2E+01	n		7.2E+03	n		1.7E+02	n	4.1E+04	n			8.7E+01	n	3.6E+01	n		3.6E+03	n		8.7E+01	n	2.7E+03	n		
Strontium	7440-24-6	4.9E+05	n	1.8E+03	n		1.8E+05	n								4.9E+05	n	9.2E+02	n		9.2E+04	n							
Strychnine	57-24-9	2.0E+02	n	1.1E-01	n		1.1E+01	n								2.0E+02	n	5.6E-02	n		5.6E+00	n							
Styrene	100-42-5	1.5E+04	n	3.3E+00	m		3.3E+02	m		1.6E+04	n	6.9E+05	n	>S		7.8E+03	n	1.6E+00	m		1.6E+02	m		8.1E+03	n	4.5E+04	n	>S	
Sulfate*	14808-79-8																												
Sulfide*	18496-25-8																												
Sulfolane	126-33-0	1.4E+01	n	2.8E-03	n		2.8E-01	n								1.4E+01	n	1.4E-03	n		1.4E-01	n							
Sulfur*	7704-34-9																												
Sulprofos (Bolstar)	35400-43-2	2.0E+03	n	2.3E+04	n	>S	1.0E+06	n	>S	9.9E+04	n	1.0E+06	n	>S		2.0E+03	n	1.1E+04	n	>S	1.0E+06	n	>S	5.1E+04	n	1.0E+06	n	>S	
TCDD, 2,3,7,8- (dioxin)	1746-01-6	5.0E-03	n	1.7E-02	m		1.7E+00	m								5.0E-03	n	8.5E-03	m		8.5E-01	m							
Tebuconazole	107534-96-3	2.0E+04	n	9.4E+01	n		9.4E+03	n	>S							2.0E+04	n	4.7E+01	n		4.7E+03	n	>S						
Tebuthiuron	34014-18-1	4.8E+04	n	1.6E+01	n		1.6E+03	n								4.8E+04	n	8.1E+00	n		8.1E+02	n							
Terbufos	13071-79-9	1.7E+01	n	1.0E+00	n		1.0E+02	n								1.7E+01	n	5.0E-01	n		5.0E+01	n							
Tert-amyl ethyl ether (TAEE)	919-94-8	1.6E+03	n	2.8E+01	n		2.8E+03	n		1.7E+03	n	2.0E+04	n	>S		8.7E+02	n	1.4E+01	n		1.4E+03	n		8.8E+02	n	1.3E+03	n		
Tert-amyl-methyl ether (TAME)	994-05-8	1.6E+03	n	1.1E+01	n		1.1E+03	n		1.7E+03	n	1.4E+04	n			8.7E+02	n	5.7E+00	n		5.7E+02	n		8.8E+02	n	8.8E+02	n		
Tert-butyl alcohol (2-methyl-2-propanol)	75-65-0	1.5E+04	n	1.4E+01	n		1.4E+03	n		1.9E+04	n	1.0E+06	n	>S		8.7E+03	n	6.9E+00	n		6.9E+02	n		9.6E+03	n	9.6E+04	n		
Tetrachlorobenzene, 1,2,3,4-	634-66-2	2.0E+02	n	3.6E+01	n		3.6E+03	n		1.8E+05	n	1.0E+06	n	>S		2.0E+02	n	1.8E+01	n		1.8E+03	n		9.5E+04	n	1.0E+06	n	>S	
Tetrachlorobenzene, 1,2,3,5-	634-90-2	2.0E+02	n	5.6E+00	n		5.6E+02	n		8.2E+04	n	1.0E+06	n	>S		2.0E+02	n	2.8E+00	n		2.8E+02	n		4.2E+04	n	7.7E+05	n	>S	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	2.0E+02	n	1.4E+00	n		1.4E+02	n	>S	4.7E+04	n	1.0E+06	n	>S		2.0E+02	n	7.2E-01	n		7.2E+01	n	>S	2.4E+04	n	2.3E+05	n	>S	
Tetrachloroethane, 1,1,1,2-	630-20-6	1.3E+02	c	3.2E+00	c		3.2E+02	c		1.5E+02	c	7.5E+03	c			7.3E+01	c	1.6E+00	c		1.6E+02	c		7.8E+01	c	4.9E+02	c		
Tetrachloroethane, 1,1,2,2-	79-34-5	1.4E+01	c	5.2E-02	c		5.2E+00	c		1.5E+01	c	3.7E+02	c			7.3E+00	c	2.6E-02	c		2.6E+00	c		7.7E+00	c	2.4E+01	c		
Tetrachloroethylene	127-18-4	4.1E+02	c	5.0E-02	m		5.0E+00	m		1.6E+03	c	8.4E+03	c	>S		3.3E+02	c	2.5E-02	m		2.5E+00	m		8.1E+02	c	5.4E+02	c		
Tetrachlorophenol, 2,3,4,5-	4901-51-3	6.4E+03	n	4.4E+01	n		4.4E+03	n		9.4E+03	n	1.0E+06	n	>S		3.9E+03	n	2.2E+01	n		2.2E+03	n		4.8E+03	n	3.4E+05	n	>S	
Tetrachlorophenol, 2,3,4,6-	58-90-2	2.5E+03	n	1.3E+01	n		1.3E+03	n	>S	2.8E+03	n	5.9E+05	n	>S		1.4E+03	n	6.7E+00	n		6.7E+02	n	>S	1.5E+03	n	3.8E+04	n	>S	

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area														30 acre source area													
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]		$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]		$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Tetrachlorophenol, 2,3,5,6-	935-95-5	2.5E+02	n	6.5E+00	n	>S	6.5E+02	n	>S	2.6E+02	n	8.4E+03	n	>S		1.3E+02	n	3.2E+00	n	>S	3.2E+02	n	>S	1.3E+02	n	5.4E+02	n	>S	
Tetrachlorvinphos (Stirophos)	22248-79-9	2.5E+04	n	7.1E+03	n		7.1E+05	n	>S	1.9E+05	n	1.0E+06	n	>S		2.2E+04	n	3.5E+03	n		3.5E+05	n	>S	9.6E+04	n	1.0E+06	n	>S	
Tetradifon	116-29-0	1.4E+04	n	2.6E+02	n	>S	2.6E+04	n	>S							1.4E+04	n	1.3E+02	n	>S	1.3E+04	n	>S						
Tetraethyl dithiopyrophosphate (sulfotep)	3689-24-5	1.5E+02	n	1.2E+00	n		1.2E+02	n		2.7E+02	n	1.5E+05	n	>S		9.9E+01	n	5.8E-01	n		5.8E+01	n		1.4E+02	n	9.8E+03	n	>S	
Tetraethyl lead	78-00-2	6.6E-02	n	1.5E-03	n		1.5E-01	n		2.7E+00	n	2.2E+02	n	>S		6.5E-02	n	7.5E-04	n		7.5E-02	n		1.4E+00	n	1.4E+01	n		
Tetraethyl pyrophosphate (TEPP)	107-49-3	7.0E+00	n	2.8E-02	n		2.8E+00	n		1.1E+02	n	1.0E+05	n			6.6E+00	n	1.4E-02	n		1.4E+00	n		5.8E+01	n	6.8E+03	n		
Tetraethylene glycol	112-60-7	2.5E+03	n	4.6E+01	n		4.6E+03	n		2.5E+03	n	1.0E+06	n	>S		1.3E+03	n	2.3E+01	n		2.3E+03	n		1.3E+03	n	1.0E+06	n	>S	
Tetrahydrofuran	109-99-9	2.9E+02	c	5.6E-01	c		5.6E+01	c		3.2E+02	c	7.8E+03	c			1.6E+02	c	2.8E-01	c		2.8E+01	c		1.6E+02	c	5.0E+02	c		
Tetrahydropyran	142-68-7	3.1E+02	c	6.1E-01	c		6.1E+01	c		3.4E+02	c	1.0E+04	c			1.7E+02	c	3.0E-01	c		3.0E+01	c		1.7E+02	c	6.5E+02	c		
Tetraoxadodecane, 2,5,8,11-	112-49-2	8.5E+03	n	5.1E+00	n		5.1E+02	n		1.3E+04	n	1.0E+06	n	>S		5.2E+03	n	2.6E+00	n		2.6E+02	n		6.5E+03	n	2.8E+05	n		
Thallium and compounds (as thallium ch	7791-12-0	7.8E+01	n	1.7E+00	m		1.7E+02	m								7.8E+01	n	8.7E-01	m		8.7E+01	m							
Thiofanox	39196-18-4	1.4E+02	n	9.4E-02	n		9.4E+00	n		4.5E+02	n	1.5E+05	n	>S		1.1E+02	n	4.7E-02	n		4.7E+00	n		2.3E+02	n	9.5E+03	n		
Thionazin	297-97-2	4.8E+01	n	3.3E-02	n		3.3E+00	n								4.8E+01	n	1.7E-02	n		1.7E+00	n							
Thiophanate-methyl	23564-05-8	5.5E+04	n	1.3E+01	n	>S	1.3E+03	n	>S							5.5E+04	n	6.6E+00	n	>S	6.6E+02	n	>S						
Thiram	137-26-8	1.2E+03	n	1.0E+01	n		1.0E+03	n	>S	1.8E+03	n	1.0E+06	n	>S		7.2E+02	n	5.2E+00	n		5.2E+02	n	>S	9.1E+02	n	8.3E+04	n	>S	
Tin	7440-31-5	4.0E+05	n	1.1E+05	n	>S	1.0E+06	n	>S							4.0E+05	n	5.5E+04	n	>S	1.0E+06	n	>S						
Titanium	7440-32-6	1.0E+06	n		n	>S		n	>S							1.0E+06	n		n	>S		n	>S						
Toluene	108-88-3	4.2E+04	n	8.2E+00	m		8.2E+02	m		8.8E+04	n	7.3E+05	n	>S		2.9E+04	n	4.1E+00	m		4.1E+02	m		4.5E+04	n	4.7E+04	n	>S	
Toluene diisocyanate, 2,4/2,6-	26471-62-5	2.0E+02	n							2.0E+02	n	2.4E+05	n			1.0E+02	n							1.0E+02	n	1.5E+04	n		
Toluenediamine, 2,4-	95-80-7	6.0E+00	c	3.4E-02	c		3.4E+00	c		1.1E+04	n	1.0E+06	n	>S		6.0E+00	c	1.7E-02	c		1.7E+00	c		5.6E+03	n	6.2E+05	n	>S	
Toluenediamine, 2,6-	823-40-5	2.0E+04	n	4.3E+00	n		4.3E+02	n								2.0E+04	n	2.2E+00	n		2.2E+02	n							
Toluidine, o-	95-53-4	5.9E+01	c	8.6E-02	c		8.6E+00	c		2.3E+02	c	4.5E+04	c			4.8E+01	c	4.3E-02	c		4.3E+00	c		1.2E+02	c	2.9E+03	c		
Toluidine, p-	106-49-0	1.0E+02	c	3.1E-02	c		3.1E+00	c								1.0E+02	c	1.6E-02	c		1.6E+00	c							
Toxaphene	8001-35-2	1.7E+01	c	1.2E+01	m		1.2E+03	m		1.6E+03	c	1.0E+06	c	>S		1.7E+01	c	5.8E+00	m		5.8E+02	m		8.3E+02	c	7.5E+05	c	>S	
TPH, TX1005, C6-C12	TPH-1005-1	3.9E+03	n	1.9E+02	n		1.9E+04	n	>S	4.3E+03	n	1.6E+05	n	>S		2.1E+03	n	9.7E+01	n		9.7E+03	n	>S	2.2E+03	n	1.1E+04	n	>S	
TPH, TX1005, >C12-C28	TPH-1005-2	1.2E+04	n	5.9E+02	n		5.9E+04	n	>S	2.1E+04	n	1.0E+06	n	>S		7.8E+03	n	3.0E+02	n		3.0E+04	n	>S	1.1E+04	n	1.4E+05	n	>S	
TPH, TX1005, >C12-C35	TPH-1005-3	1.2E+04	n	5.9E+02	n		5.9E+04	n	>S	2.1E+04	n	1.0E+06	n	>S		7.8E+03	n	3.0E+02	n		3.0E+04	n	>S	1.1E+04	n	1.4E+05	n	>S	
TPH, TX1005, >C28-C35	TPH-1005-4	1.2E+04	n	5.9E+02	n		5.9E+04	n	>S	2.1E+04	n	1.0E+06	n	>S		7.8E+03	n	3.0E+02	n		3.0E+04	n	>S	1.1E+04	n	1.4E+05	n	>S	
TP Silvex, 2,4,5-	93-72-1	4.7E+03	n	5.3E+00	m		5.3E+02	m		3.6E+04	n	1.0E+06	n	>S		4.2E+03	n	2.6E+00	m		2.6E+02	m		1.9E+04	n	1.0E+06	n	>S	
Triademenol	55219-65-3	2.0E+04	n	2.5E+01	n		2.5E+03	n	>S							2.0E+04	n	1.2E+01	n		1.2E+03	n	>S						
Triallate	2303-17-5	8.9E+03	n	5.6E+01	n		5.6E+03	n	>S							8.9E+03	n	2.8E+01	n		2.8E+03	n	>S						
Triaminotrinitrobenzene (TATB)	3058-38-6	4.3E+02	n	1.4E-01	c		1.4E+01	c		5.4E+02	n	1.0E+06	n	>S		2.4E+02	n	7.2E-02	c		7.2E+00	c		2.8E+02	n	5.4E+05	n	>S	
Tributyltin oxide	56-35-9	1.1E+00	n		n			n		1.1E+00	n					5.5E-01	n		n			n		5.5E-01	n				
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	6.3E+05	n	2.4E+05	n	>S	1.0E+06	n	>S	6.4E+05	n	1.0E+06	n	>S		3.3E+05	n	1.2E+05	n	>S	1.0E+06	n	>S	3.3E+05	n	9.0E+04	n	>S	
Trichlorobenzene, 1,2,3-	87-61-6	1.6E+03	n	7.9E+01	n		7.9E+03	n	>S	8.5E+03	n	1.0E+06	n	>S		1.4E+03	n	3.9E+01	n		3.9E+03	n	>S	4.4E+03	n	8.7E+04	n	>S	
Trichlorobenzene, 1,2,4-	120-82-1	5.2E+03	n	4.8E+00	m		4.8E+02	m		2.1E+04	n	1.0E+06	n	>S		4.2E+03	n	2.4E+00	m		2.4E+02	m		1.1E+04	n	9.7E+04	n	>S	
Trichlorobenzene, 1,3,5-	108-70-3	1.3E+03	n	2.2E+01	n		2.2E+03	n	>S	3.5E+03	n	2.9E+05	n	>S		9.6E+02	n	1.1E+01	n		1.1E+03	n	>S	1.8E+03	n	1.9E+04	n	>S	
Trichloroethane, 1,1,1-	71-55-6	1.0E+05	n	1.6E+00	m		1.6E+02	m		1.1E+05	n	4.5E+05	n	>S		5.4E+04	n	8.1E-01	m		8.1E+01	m		5.5E+04	n	2.9E+04	n	>S	
Trichloroethane, 1,1,2-	79-00-5	3.5E+01	c	2.0E-02	m		2.0E+00	m		3.8E+01	c	5.4E+02	c			1.9E+01	c	1.0E-02	m		1.0E+00	m		1.9E+01	c	3.5E+01	c		
Trichloroethylene	79-01-6	2.1E+02	n	3.4E-02	m		3.4E+00	m		2.1E+02	n	1.1E+03	n			1.1E+02	n	1.7E-02	m		1.7E+00	m		1.1E+02	n	7.2E+01	n		
Trichlorofluoromethane	75-69-4	5.0E+04	n	3.8E+02	n		3.8E+04	n	>S	6.0E+04	n	1.0E+05	n	>S		2.8E+04	n	1.9E+02	n		1.9E+04	n	>S	3.1E+04	n	6.4E+03	n		
Trichloronate	327-98-0	2.0E+03	n	3.7E+02	n		3.7E+04	n	>S							2.0E+03	n	1.8E+02	n		1.8E+04	n	>S						
Trichlorophenol, 2,3,4-	15950-66-0	3.2E+04	n	1.8E+02	n		1.8E+04	n		6.2E+04	n	1.0E+06	n	>S		2.2E+04	n	8.9E+01	n		8.9E+03	n		3.2E+04	n	1.0E+06	n	>S	
Trichlorophenol, 2,3,5-	933-78-8	2.6E+04	n	8.3E+01	n		8.3E+03	n		4.1E+04	n	1.0E+06	n	>S		1.6E+04	n	4.1E+01	n		4.1E+03	n		2.1E+04	n	1.0E+06	n	>S	
Trichlorophenol, 2,3,6-	933-75-5	3.2E+03	n	8.6E+01	n		8.6E+03	n	>S	3.3E+03	n	1.4E+05	n	>S		1.7E+03	n	4.3E+01	n		4.3E+03	n	>S	1.7E+03	n	8.9E+03	n	>S	
Trichlorophenol, 2,4,5-	95-95-4	2.1E+04	n	1.0E+02	n		1.0E+04	n		3.0E+04	n	1.0E+06	n	>S		1.2E+04	n	5.1E+01	n		5.1E+03	n		1.5E+04	n	5.7E+05	n	>S	
Trichlorophenol, 2,4,6-	88-06-2	6.8E+02	n	5.2E-01	n		5.2E+01	n		3.3E+03	c	5.9E+05	c	>S		6.8E+02	n	2.6E-01	n		2.6E+01	n		1.7E+03	c	3.8E+04	c	>S	
Trichlorophenol, 3,4,5-	609-19-8	4.7E+04	n	9.8E+02	n		9.8E+04	n		1.5E+05	n	1.0E+06	n	>S		3.7E+04	n	4.9E+02	n		4.9E+04	n		7.9E+04	n	1.0E+06	n	>S	
Trichlorophenoxyacetic acid, 2,4,5-	93-76-5	2.8E+03	n	2.9E+00	n		2.9E+02	n		4.9E+03	n	1.0E+06	n	>S		1.8E+03	n	1.5E+00	n		1.5E+02	n		2.5E+03	n	9.3E+04	n	>S	

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area												30 acre source area											
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]		$^{GW}Soil$ for Secondary MCL (mg/kg)
Trichloropropane, 1,1,2-	598-77-6	1.0E+03	n	4.3E+00	n	4.3E+02	n	1.3E+03	n	8.9E+03	n	>S		5.9E+02	n	2.2E+00	n	2.2E+02	n	6.6E+02	n	5.8E+02	n	>S	
Trichloropropane, 1,2,3-	96-18-4	4.1E+00	c	5.1E-03	c	5.1E-01	c	3.9E+03	n	1.6E+05	n	>S		4.1E+00	c	2.6E-03	c	2.6E-01	c	2.0E+03	n	1.0E+04	n		
Triethanolamine	102-71-6	1.1E+03	n	2.8E+01	n	2.8E+03	n	1.1E+03	n	1.0E+06	n			5.5E+02	n	1.4E+01	n	1.4E+03	n	5.5E+02	n	1.0E+06	n		
Triethylamine	121-44-8	1.5E+02	n					1.5E+02	n	2.2E+03	n			7.7E+01	n					7.7E+01	n	1.4E+02	n		
Triethylene glycol	112-27-6	1.0E+06	n	4.2E+02	n	4.2E+04	n							1.0E+06	n	2.1E+02	n	2.1E+04	n						
Triethylphosphorothioate, O, O, O-	126-68-1	5.7E+00	n	1.3E-02	n	1.3E+00	n							5.7E+00	n	6.5E-03	n	6.5E-01	n						
Trifluralin	1582-09-8	2.5E+03	c	1.5E+02	c	1.5E+04	c	2.3E+04	n	1.0E+06	n	>S		2.5E+03	c	7.3E+01	c	7.3E+03	c	1.2E+04	n	1.0E+06	n	>S	
Trimethylamine	75-50-3	2.1E+02	n					2.1E+02	n	6.1E+03	n			1.1E+02	n					1.1E+02	n	3.9E+02	n		
Trimethylbenzene, 1,2,3-	526-73-8	1.7E+02	n	9.4E+01	n	9.4E+03	n	1.7E+02	n	6.8E+03	n	>S		8.7E+01	n	4.7E+01	n	4.7E+03	n	8.7E+01	n	4.4E+02	n		
Trimethylbenzene, 1,2,4-	95-63-6	2.1E+02	n	2.9E+01	n	2.9E+03	n	2.2E+02	n	1.1E+04	n	>S		1.1E+02	n	1.4E+01	n	1.4E+03	n	1.1E+02	n	6.8E+02	n		
Trimethylbenzene, 1,3,5-	108-67-8	1.6E+02	n	1.6E+02	n	1.6E+04	n	1.6E+02	n	7.7E+03	n	>S		8.3E+01	n	7.9E+01	n	7.9E+03	n	8.3E+01	n	5.0E+02	n		
Trinitrobenzene, 1,3,5-	99-35-4	2.0E+04	n	5.4E+00	n	5.4E+02	n							2.0E+04	n	2.7E+00	n	2.7E+02	n						
Trinitrophenylmethylnitramine (tetryl; ni	479-45-8	1.0E+02	n	3.3E+00	n	3.3E+02	n	1.1E+02	n	7.0E+04	n	>S		5.4E+01	n	1.6E+00	n	1.6E+02	n	5.5E+01	n	1.3E+04	n	>S	
Trinitrotoluene, 2,4,6-	118-96-7	7.8E+01	n	5.1E-01	n	5.1E+01	n	1.0E+02	n	4.4E+04	n	>S		4.5E+01	n	2.6E-01	n	2.6E+01	n	5.2E+01	n	2.8E+03	n	>S	
Uranium (soluble salts)	7440-61-1	2.9E+03	n	1.8E+03	m	>S 1.8E+05	m	>S						2.9E+03	n	8.9E+02	m	>S 8.9E+04	m	>S					
Valeric acid (pentanoic acid)	109-52-4	1.8E+02	n	7.0E+01	n	>S 7.0E+03	n	>S 1.8E+02	n	5.3E+04	n	>S		9.5E+01	n	3.5E+01	n	>S 3.5E+03	n	>S 9.5E+01	n	3.4E+03	n	>S	
Vanadium	7440-62-2	2.4E+03	n	1.0E+04	n	>S 1.0E+06	n	>S						2.3E+03	n	5.1E+03	n	>S 5.1E+05	n	>S					
Vernam	1929-77-7	6.8E+02	n	8.2E+00	n	8.2E+02	n							6.8E+02	n	4.1E+00	n	4.1E+02	n						
Vinyl acetate	108-05-4	4.3E+03	n	1.6E+02	n	1.6E+04	n	4.3E+03	n	4.3E+04	n			2.2E+03	n	8.0E+01	n	8.0E+03	n	2.2E+03	n	2.8E+03	n		
Vinyl chloride	75-01-4	1.5E+01	c	2.2E-02	m	2.2E+00	m	7.2E+01	c	7.1E+01	c			1.3E+01	c	1.1E-02	m	1.1E+00	m	3.7E+01	c	4.6E+00	c		
Vinylcyclohexane	695-12-5	2.1E+02	n	4.2E+03	n	>S 4.2E+05	n	>S 2.1E+02	n	3.6E+03	n	>S		1.1E+02	n	2.1E+03	n	>S 2.1E+05	n	>S 1.1E+02	n	2.3E+02	n	GW Ing	
Warfarin	81-81-2	1.1E+02	n	8.4E-01	n	8.4E+01	n	2.5E+02	n	2.5E+05	n	>S		7.8E+01	n	4.2E-01	n	4.2E+01	n	1.3E+02	n	1.6E+04	n	>S	
Xylene, m-	108-38-3	1.3E+04	n	1.1E+02	m	1.1E+04	m	>S 1.3E+04	n	1.6E+05	n	>S		6.7E+03	n	5.3E+01	m	5.3E+03	m	>S 6.7E+03	n	1.0E+04	n	>S	
Xylene, o-	95-47-6	9.1E+04	n	7.1E+01	m	7.1E+03	m	>S 9.5E+04	n	1.0E+06	n	>S		4.8E+04	n	3.5E+01	m	3.5E+03	m	>S 4.9E+04	n	4.9E+05	n	>S	
Xylene, p-	106-42-3	1.3E+04	n	1.5E+02	m	1.5E+04	m	>S 1.3E+04	n	2.0E+05	n	>S		6.7E+03	n	7.5E+01	m	7.5E+03	m	>S 6.7E+03	n	1.3E+04	n	>S	
Xylenes	1330-20-7	1.2E+04	n	1.2E+02	m	1.2E+04	m	>S 1.3E+04	n	1.8E+05	n	>S		6.5E+03	n	6.1E+01	m	6.1E+03	m	>S 6.7E+03	n	1.1E+04	n	>S	
Zinc	7440-66-6	2.5E+05	n	7.0E+03	n	>S 7.0E+05	n	>S					1.6E+03	2.5E+05	n	3.5E+03	n	>S 3.5E+05	n	>S					8.0E+02
6 C aliphatics (TPH)	NA	4.0E+03	n	5.1E+02	n	--- 5.1E+04	n	> S 4.3E+03	n	5.2E+03	n	> S	---	2.1E+03	n	2.6E+02	n	--- 2.6E+04	n	> S 2.2E+03	n	3.4E+02	n	> S	---
>6-8 C aliphatics (TPH)	NA	4.0E+03	n	1.3E+03	n	--- 1.3E+05	n	> S 4.3E+03	n	8.5E+03	n	> S	---	2.1E+03	n	6.3E+02	n	--- 6.3E+04	n	> S 2.2E+03	n	5.5E+02	n	> S	---
>8-10 C aliphatics (TPH)	NA	4.1E+03	n	1.1E+04	n	> S 1.0E+06	n	> S 4.3E+03	n	2.7E+04	n	> S	---	2.2E+03	n	5.4E+03	n	> S 5.4E+05	n	> S 2.2E+03	n	1.8E+03	n	> S	---
>10-12 C aliphatics (TPH)	NA	4.0E+03	n	7.6E+04	n	> S 1.0E+06	n	> S 4.3E+03	n	1.3E+05	n	> S	---	2.1E+03	n	3.8E+04	n	> S 1.0E+06	n	> S 2.2E+03	n	8.2E+03	n	> S	---
>12-16 C aliphatics (TPH)	NA	6.2E+03	n	1.0E+06	n	> S 1.0E+06	n	> S 6.8E+03	n	5.7E+05	n	> S	---	3.3E+03	n	7.4E+05	n	> S 1.0E+06	n	> S 3.5E+03	n	3.7E+04	n	> S	---
>16-21 C aliphatics (TPH)	NA	1.0E+06	n	1.0E+06	n	> S 1.0E+06	n	> S ---	---	---	---	---	---	1.0E+06	n	1.0E+06	n	> S 1.0E+06	n	> S ---	---	---	---	---	---
(for transformer mineral oil releases only)	NA	1.0E+06	n	1.0E+06	n	> S 1.0E+06	n	> S ---	---	---	---	---	---	1.0E+06	n	1.0E+06	n	> S 1.0E+06	n	> S ---	---	---	---	---	---
>7-8 C aromatics (TPH)	NA	1.8E+04	n	6.0E+01	n	--- 6.0E+03	n	> S 2.1E+04	n	1.8E+05	n	> S	---	1.0E+04	n	3.0E+01	n	--- 3.0E+03	n	> S 1.1E+04	n	1.2E+04	n	> S	---
>8-10 C aromatics (TPH)	NA	3.9E+03	n	1.9E+02	n	--- 1.9E+04	n	> S 4.3E+03	n	1.6E+05	n	> S	---	2.1E+03	n	9.7E+01	n	--- 9.7E+03	n	> S 2.2E+03	n	1.1E+04	n	> S	---
>10-12 C aromatics (TPH)	NA	6.9E+03	n	3.0E+02	n	--- 3.0E+04	n	> S 9.2E+03	n	6.1E+05	n	> S	---	4.0E+03	n	1.5E+02	n	--- 1.5E+04	n	> S 4.8E+03	n	4.0E+04	n	> S	---
>12-16 C aromatics (TPH)	NA	1.2E+04	n	5.9E+02	n	--- 5.9E+04	n	> S 2.1E+04	n	1.0E+06	n	> S	---	7.8E+03	n	3.0E+02	n	--- 3.0E+04	n	> S 1.1E+04	n	1.4E+05	n	> S	---
>16-21 C aromatics (TPH)	NA	1.9E+04	n	1.4E+03	n	> S 1.4E+05	n	> S ---	---	---	---	---	---	1.9E+04	n	7.0E+02	n	> S 7.0E+04	n	> S ---	---	---	---	---	---
>21-35 C aromatics (TPH)	NA	1.9E+04	n	1.1E+04	n	> S 1.0E+06	n	> S ---	---	---	---	---	---	1.9E+04	n	5.5E+03	n	> S 5.5E+05	n	> S ---	---	---	---	---	---
Transformer mineral oil	NA	8.0E+04	n	7.5E+05	n	--- 1.0E+06	n	--- 1.2E+05	n	1.0E+06	n	---	---	5.2E+04	n	3.7E+05	n	--- 1.0E+06	n	--- 6.1E+04	n	8.6E+05	n	---	---

Footnotes

[1] In accordance with §350.72(b), when establishing Tier 1 PCLs for individual COCs for each of the individual and combined human health exposure pathways, the person must evaluate whether the PCLs need to be adjusted to lower concentrations to meet the cumulative carcinogenic risk level and hazard criteria specified in §350.72(c). For COCs which exhibit both carcinogenic and noncarcinogenic characteristics, they shall be evaluated as both a carcinogen and noncarcinogen when determining whether the PCL established for an individual COC for each of the individual and combined human health exposure pathways needs to be adjusted to a lower concentration to meet the cumulative risk and hazard criteria. The person shall then use the lower of the carcinogenic or noncarcinogenic PCL as the Tier 1 human health PCL. In other words, the Tier 1 PCLs provided in this table for an individual COC should not be used as the final Tier 1 human health PCL for any of the individual or combined exposure pathways in cases where there are more than 10 carcinogenic and/or more than 10 noncarcinogenic COCs within a source medium unless it can be demonstrated that further downward adjustment is not necessary to meet the cumulative risk and hazard criteria.

[2] Combined includes inhalation, ingestion, and dermal pathways

Texas Commission on Environmental Quality - Table 2
Tier 1 Commercial/Industrial Soil PCLs[1]

Last Revised: March 25, 2009

		0.5 acre source area						30 acre source area					
Chemical of Concern	CAS	$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	^{GW}Soil for Secondary MCL (mg/kg)	
		$^{Tot}Soil_{Comb}$[2] (mg/kg)	note[3]	$^{GW}Soil_{Ing}$ (mg/kg)	note[3]	$^{GW}Soil_{Class\ 3}$ (mg/kg)	note[3]	$^{Air}Soil_{Inh\text{-}V}$[4] (mg/kg)	note[3]	$^{Air}GW\text{-}Soil_{Inh\text{-}V}$ (mg/kg)	note[3]	^{GW}Soil for Secondary MCL (mg/kg)	

[3] c = carcinogenic; n = noncarcinogenic; m = primary MCL-based; a = EPA Action Level-based; > S = solubility limit exceeded during calculation; < GW Ing = less than $^{GW}GW_{Ing}$ value

[4] For subsurface soils only

[5] Please contact the TCEQ for assistance in determining a site-specific approach for $^{GW}Soil_{Ing}$ values for these compounds.

[6] Note that much higher PCLs for mercury may be obtained using a pH-dependent Kd based on site-specific information (see Figure:30 TAC §350.73(e)(1)(C)).

[7] Persons must use the value provided in the "^{GW}Soil for Secondary MCL" column of this table as the ^{GW}Soil PCL for MTBE if the conditions described in §350.74(f)(3) exist.

*These compounds, acetic acid, ammonium polyphosphate, ammonium salts, calcium, chloride, ehtylene, hydrogen chloride (hydrochloric acid), iron, limonene, d-, magnesium, phosphorus, total, potassium, sodium, sulfate, sulfide, and sulfure, are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tceq.state.tx.us/remediation/trrp/trrp.htm.

All values capped at 1E+06

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential								Commercial/Industrial								
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area		Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)
Acenaphthene	83-32-9	1.5E+00	n	1.5E+02	n >S					4.4E+00	n >S	4.4E+02	n >S					
Acenaphthylene	208-96-8	1.5E+00	n	1.5E+02	n >S					4.4E+00	n >S	4.4E+02	n >S					
Acetaldehyde	75-07-0	2.4E+00	n	2.4E+02	n	2.4E+03	n	3.1E+02	n	7.3E+00	n	7.3E+02	n	3.3E+03	n	4.3E+02	n	
Acetate, 2-ethoxyethanol	111-15-9	4.2E-01	n	4.2E+01	n	2.0E+05	n >S	2.6E+04	n	1.2E+00	n	1.2E+02	n	2.8E+05	n >S	3.7E+04	n	
Acetate, isoamyl	123-92-2	1.8E+00	n	1.8E+02	n	2.9E+04	n >S	3.8E+03	n >S	5.3E+00	n	5.3E+02	n	4.1E+04	n >S	5.3E+03	n >S	
Acetate, isobutyl	110-19-0	1.2E+00	n	1.2E+02	n	4.9E+04	n >S	6.3E+03	n >S	3.5E+00	n	3.5E+02	n	6.8E+04	n >S	8.8E+03	n >S	
Acetate, sec-butyl	105-46-4	1.2E+00	n	1.2E+02	n	7.3E+04	n >S	9.4E+03	n >S	3.5E+00	n	3.5E+02	n	1.0E+05	n >S	1.3E+04	n >S	
Acetic acid*	64-19-7																	
Acetone (2-propanone)	67-64-1	2.2E+01	n	2.2E+03	n	2.5E+05	n	3.3E+04	n	6.6E+01	n	6.6E+03	n	3.5E+05	n	4.6E+04	n	
Acetone cyanohydrin	75-86-5	7.3E-02	n	7.3E+00	n	3.4E+05	n	4.4E+04	n	2.2E-01	n	2.2E+01	n	4.8E+05	n	6.2E+04	n	
Acetonitrile	75-05-8	7.8E-01	n	7.8E+01	n	3.2E+04	n	4.2E+03	n	2.3E+00	n	2.3E+02	n	4.5E+04	n	5.8E+03	n	
Acetophenone	98-86-2	2.4E+00	n	2.4E+02	n	1.4E+05	n >S	1.8E+04	n >S	7.3E+00	n	7.3E+02	n	1.9E+05	n >S	2.5E+04	n >S	
Acetylaminofluorene, 2-	53-96-3	2.4E-04	c	2.4E-02	c	6.3E+02	c >S	1.0E+02	c >S	5.4E-04	c	5.4E-02	c	1.1E+03	c >S	1.8E+02	c >S	
Acifluorfen, sodium	62476-59-9	3.2E-01	n	3.2E+01	n	1.0E+06	n >S	1.0E+06	n >S	9.5E-01	n	9.5E+01	n	1.0E+06	n >S	1.0E+06	n >S	
Acridine	260-94-6	7.3E-02	n	7.3E+00	n					2.2E-01	n	2.2E+01	n					
Acrolein	107-02-8	1.2E-02	n	1.2E+00	n	7.0E+01	n	9.1E+00	n	3.7E-02	n	3.7E+00	n	9.8E+01	n	1.3E+01	n	
Acrylamide	79-06-1	2.0E-04	c	2.0E-02	c	2.9E+02	c	3.9E+01	c	4.5E-04	c	4.5E-02	c	4.9E+02	c	6.5E+01	c	
Acrylic acid	79-10-7	1.2E+01	n	1.2E+03	n	1.5E+04	n	2.0E+03	n	3.7E+01	n	3.7E+03	n	2.1E+04	n	2.7E+03	n	
Acrylonitrile	107-13-1	1.7E-03	c	1.7E-01	c	5.8E+01	c	7.5E+00	c	3.8E-03	c	3.8E-01	c	9.7E+01	c	1.3E+01	c	
Adipic acid (hexanedioic acid)	124-04-9	4.9E+01	n	4.9E+03	n	4.2E+05	n >S	3.1E+05	n >S	1.5E+02	n	1.5E+04	n	5.9E+05	n >S	4.3E+05	n >S	
Alachlor	15972-60-8	2.0E-03	m	2.0E-01	m					2.0E-03	m	2.0E-01	m					
Aldicarb	116-06-3	7.0E-03	m	7.0E-01	m					7.0E-03	m	7.0E-01	m					
Aldicarb sulfone	1646-88-4	7.0E-03	m	7.0E-01	m					7.0E-03	m	7.0E-01	m					
Aldrin	309-00-2	5.4E-05	c	5.4E-03	c	4.4E+00	c >S	5.7E-01	c >S	1.2E-04	c	1.2E-02	c	7.4E+00	c >S	9.6E-01	c >S	
Allyl alcohol	107-18-6	1.2E-01	n	1.2E+01	n	8.9E+02	n	1.1E+02	n	3.7E-01	n	3.7E+01	n	1.2E+03	n	1.6E+02	n	
Allyl chloride	107-05-1	2.4E-01	n	2.4E+01	n	9.1E+00	n	1.2E+00	n	7.3E-01	n	7.3E+01	n	1.3E+01	n	1.7E+00	n	
Aluminum	7429-90-5	2.4E+01	n >S	2.4E+03	n >S					7.3E+01	n >S	7.3E+03	n >S					2.0E-01
Ametryn	834-12-8	2.2E-01	n	2.2E+01	n					6.6E-01	n	6.6E+01	n					
Amino-2,6-dinitrotoluene, 4-	19406-51-0	4.1E-03	n	4.1E-01	n	2.8E+03	n >S	3.6E+02	n >S	1.2E-02	n	1.2E+00	n	3.9E+03	n >S	5.1E+02	n >S	
Amino-4,6-dinitrotoluene, 2-	35572-78-2	4.1E-03	n	4.1E-01	n	2.8E+03	n >S	3.6E+02	n >S	1.2E-02	n	1.2E+00	n	3.9E+03	n >S	5.1E+02	n >S	
Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	92-67-1	1.5E-04	c	1.5E-02	c					3.4E-04	c	3.4E-02	c					
Aminopyridine, 4-	504-24-5	4.9E-04	n	4.9E-02	n	4.7E+03	n	6.1E+02	n	1.5E-03	n	1.5E-01	n	6.6E+03	n	8.5E+02	n	
Ammonia	7664-41-7					2.7E+03	n	3.5E+02	n					3.8E+03	n	4.9E+02	n	1.5E+00
Ammonium polyphosphate*	6833-79-9																	
Ammonium salts*	NA																	
Aniline	62-53-3	1.6E-01	c	1.6E+01	c	1.1E+04	n	1.4E+03	n	3.6E-01	c	3.6E+01	c	1.6E+04	n	2.0E+03	n	
Anthracene	120-12-7	7.3E+00	n >S	7.3E+02	n >S					2.2E+01	n >S	2.2E+03	n >S					
Anthraquinone, 9,10-	84-65-1	4.9E-01	n >S	4.9E+01	n >S					1.5E+00	n >S	1.5E+02	n >S					
Antimony	7440-36-0	6.0E-03	m >S	6.0E-01	m >S					6.0E-03	m >S	6.0E-01	m >S					
Aramite	140-57-8	3.7E-02	c	3.7E+00	c					8.2E-02	c	8.2E+00	c					
Arsenic	7440-38-2	1.0E-02	m >S	1.0E+00	m >S					1.0E-02	m >S	1.0E+00	m >S					
Arsine	7784-42-1																	

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential												Commercial/Industrial												
							$^{Air}GW_{Inh-V}$			$^{Air}GW_{Inh-V}$								$^{Air}GW_{Inh-V}$			$^{Air}GW_{Inh-V}$			Secondary	
Chemical of Concern	CAS	$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]		0.5 acre source area			30 acre source area				$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]			0.5 acre source area			30 acre source area			MCL[5]
		(mg/L)	note[4]		(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]			(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)
Asbestos	1332-21-4																									
Atrazine	1912-24-9	3.0E-03	m		3.0E-01	m	1.8E+05	n	>S	2.4E+04	n	>S		3.0E-03	m		3.0E-01	m		2.6E+05	n	>S	3.3E+04	n	>S	
Azinphos-methyl (guthion)	86-50-0	3.7E-02	n		3.7E+00	n	>S							1.1E-01	n	>S	1.1E+01	n	>S							
Azobenzene	103-33-3	8.3E-03	c		8.3E-01	c	6.8E+02	c	>S	8.8E+01	c	>S		1.9E-02	c		1.9E+00	c	>S	1.1E+03	c	>S	1.5E+02	c	>S	
Barium	7440-39-3	2.0E+00	m	>S	2.0E+02	m	>S							2.0E+00	m	>S	2.0E+02	m	>S							
Bayleton	43121-43-3	7.3E-01	n		7.3E+01	n	>S							2.2E+00	n		2.2E+02	n	>S							
Benefin (benfluralin)	1861-40-1	7.3E+00	n	>S	7.3E+02	n	>S							2.2E+01	n	>S	2.2E+03	n	>S							
Benomyl	17804-35-2	1.2E+00	n		1.2E+02	n	>S							3.7E+00	n	>S	3.7E+02	n	>S							
Benz-a-anthracene	56-55-3	1.3E-03	c		1.3E-01	c	>S	2.0E+03	c	>S	2.6E+02	c	>S	2.8E-03	c		2.8E-01	c	>S	3.4E+03	c	>S	4.4E+02	c	>S	
Benzaldehyde	100-52-7	2.4E+00	n		2.4E+02	n	5.2E+03	n	>S	6.7E+02	n			7.3E+00	n		7.3E+02	n		7.3E+03	n	>S	9.4E+02	n		
Benzene	71-43-2	5.0E-03	m		5.0E-01	m	1.8E+02	c		2.3E+01	c			5.0E-03	m		5.0E-01	m		3.0E+02	c		3.9E+01	c		
Benzenedicarbonitrile, 1,3-	626-17-5	1.5E-01	n		1.5E+01	n								4.4E-01	n		4.4E+01	n								
Benzenedicarboxylic acid, 1,2-disodecyl ester	26761-40-0	9.8E-01	n	>S	9.8E+01	n	>S	1.5E+05	n	>S	1.9E+04	n	>S	2.9E+00	n	>S	2.9E+02	n	>S	2.0E+05	n	>S	2.6E+04	n	>S	
Benzenethiol	108-98-5	2.4E-04	n		2.4E-02	n	4.5E+01	n		5.8E+00	n			7.3E-04	n		7.3E-02	n		6.3E+01	n		8.2E+00	n		
Benzidine	92-87-5	4.0E-06	c		4.0E-04	c	5.0E+00	c		8.4E-01	c			8.9E-06	c		8.9E-04	c		8.4E+00	c		1.4E+00	c		
Benzo-a-pyrene	50-32-8	2.0E-04	m		2.0E-02	m	>S	3.9E+02	c	>S	5.0E+01	c	>S	2.0E-04	m		2.0E-02	m	>S	6.5E+02	c	>S	8.4E+01	c	>S	
Benzo-b-fluoranthene	205-99-2	1.3E-03	c		1.3E-01	c	>S	1.6E+03	c	>S	2.1E+02	c	>S	2.8E-03	c	>S	2.8E-01	c	>S	2.7E+03	c	>S	3.5E+02	c	>S	
Benzo-e-pyrene	192-97-2	7.3E-01	n	>S	7.3E+01	n	>S							2.2E+00	n	>S	2.2E+02	n	>S							
Benzo-g,h,i-perylene	191-24-2	7.3E-01	n	>S	7.3E+01	n	>S							2.2E+00	n	>S	2.2E+02	n	>S							
Benzoic acid	65-85-0	9.8E+01	n		9.8E+03	n	>S	1.0E+05	n	>S	1.3E+04	n	>S	2.9E+02	n		2.9E+04	n	>S	1.5E+05	n	>S	1.9E+04	n	>S	
Benzo-j-fluoranthene	205-82-3	1.3E-03	c		1.3E-01	c	>S	1.0E+03	c	>S	1.3E+02	c	>S	2.8E-03	c	>S	2.8E-01	c	>S	1.7E+03	c	>S	2.3E+02	c	>S	
Benzo-k-fluoranthene	207-08-9	1.3E-02	c	>S	1.3E+00	c	>S	9.7E+04	c	>S	1.3E+04	c	>S	2.8E-02	c	>S	2.8E+00	c	>S	1.6E+05	c	>S	2.1E+04	c	>S	
Benzophenone	119-61-9	1.6E-01	n		1.6E+01	n								4.9E-01	n		4.9E+01	n	>S							
Benzotrichloride	98-07-7	7.0E-05	c		7.0E-03	c	8.5E+01	n		1.1E+01	n			1.6E-04	c		1.6E-02	c		1.2E+02	n	>S	1.5E+01	n		
Benzoyl peroxide	94-36-0	1.2E+00	n		1.2E+02	n	>S	1.6E+05	n	>S	2.1E+04	n	>S	3.7E+00	n		3.7E+02	n	>S	2.2E+05	n	>S	2.9E+04	n	>S	
Benzyl alcohol	100-51-6	1.2E+01	n		1.2E+03	n	9.1E+05	n	>S	1.2E+05	n	>S		3.7E+01	n		3.7E+03	n		1.0E+06	n	>S	1.7E+05	n	>S	
Benzyl chloride	100-44-7	5.4E-03	c		5.4E-01	c	1.0E+02	n		1.3E+01	n			1.2E-02	c		1.2E+00	c		1.4E+02	n		1.8E+01	n		
Benzyl dichloride	98-87-3	5.4E-03	c		5.4E-01	c	4.0E+02	n	>S	5.1E+01	n			1.2E-02	c		1.2E+00	c		5.6E+02	n	>S	7.2E+01	n		
Beryllium	7440-41-7	4.0E-03	m	>S	4.0E-01	m	>S							4.0E-03	m	>S	4.0E-01	m	>S							
Biphenyl, 1,1-	92-52-4	1.2E+00	n		1.2E+02	n	>S	2.0E+02	n	>S	2.6E+01	n	>S	3.7E+00	n		3.7E+02	n	>S	2.8E+02	n	>S	3.7E+01	n	>S	
Biphenyl, 1,1'-, 2-phenoxy-	6738-04-1	1.2E+00	n	>S	1.2E+02	n	>S							3.7E+00	n	>S	3.7E+02	n	>S							
Biquinoline, 2,2'-	119-91-5	7.3E-02	n		7.3E+00	n	>S							2.2E-01	n		2.2E+01	n	>S							
Bis (2-chloroethoxy) methane	111-91-1	8.3E-04	c		8.3E-02	c	8.0E+01	c		1.0E+01	c			1.9E-03	c		1.9E-01	c		1.3E+02	c		1.7E+01	c		
Bis (2-chloroethyl) ether	111-44-4	8.3E-04	c		8.3E-02	c	9.3E+01	c		1.2E+01	c			1.9E-03	c		1.9E-01	c		1.6E+02	c		2.0E+01	c		
Bis (2-chloroisopropyl) ether	108-60-1	1.3E-02	c		1.3E+00	c	8.7E+02	c		1.1E+02	c			2.9E-02	c		2.9E+00	c		1.5E+03	c		1.9E+02	c		
Bis (2-chloromethyl) ether	542-88-1	4.1E-06	c		4.1E-04	c	8.5E-02	c		1.1E-02	c			9.3E-06	c		9.3E-04	c		1.4E-01	c		1.9E-02	c		
Bis (2-ethyl-hexyl) phthalate	117-81-7	6.0E-03	m		6.0E-01	m	>S							6.0E-03	m		6.0E-01	m	>S							
Bismuth	7440-69-9	1.2E+01	n		1.2E+03	n								3.7E+01	n		3.7E+03	n								
Bisphenol A	80-05-7	1.2E+00	n		1.2E+02	n	1.0E+06	n	>S	7.4E+05	n	>S		3.7E+00	n		3.7E+02	n		1.0E+06	n	>S	1.0E+06	n	>S	
Boron	7440-42-8	4.9E+00	n		4.9E+02	n								1.5E+01	n		1.5E+03	n								
Bromacil	314-40-9	2.4E+00	n		2.4E+02	n								7.3E+00	n		7.3E+02	n								
Bromo-2-chloroethane, 1-	107-04-0	9.8E-01	n		9.8E+01	n	2.5E+03	n		3.3E+02	n			2.9E+00	n		2.9E+02	n		3.6E+03	n		4.6E+02	n		

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial										
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)
Bromobenzene	108-86-1	4.9E-01	n	4.9E+01	n	3.8E+02	n	>S	4.9E+01	n		1.5E+00	n	1.5E+02	n	5.3E+02	n	>S	6.8E+01	n		
Bromodichloromethane[6]	75-27-4	1.5E-02	c	1.5E+00	c							3.3E-02	c	3.3E+00	c							
Bromoform[6]	75-25-2	1.2E-01	c	1.2E+01	c	5.1E+03	c	>S	6.7E+02	c		2.6E-01	c	2.6E+01	c	8.6E+03	c	>S	1.1E+03	c		
Bromomethane	74-83-9	3.4E-02	n	3.4E+00	n	4.6E+01	n		6.0E+00	n		1.0E-01	n	1.0E+01	n	6.4E+01	n		8.3E+00	n		
Bromophenyl phenylether, 4-	101-55-3	6.1E-05	c	6.1E-03	c	1.6E+00	c	>S	2.0E-01	c		1.4E-04	c	1.4E-02	c	2.7E+00	c	>S	3.4E-01	c		
Butadiene, 1,3-	106-99-0					3.6E+01	n		4.7E+00	n						5.1E+01	n		6.6E+00	n		
Butadiene, 2-methyl-1,3- (isoprene)	78-79-5	1.5E+00	n	1.5E+02	n	8.2E+04	n	>S	1.1E+04	n	>S	4.4E+00	n	4.4E+02	n	1.2E+05	n	>S	1.5E+04	n	>S	
Butanal (butyraldehyde)	123-72-8	1.5E+00	n	1.5E+02	n	1.6E+05	n	>S	2.1E+04	n		4.4E+00	n	4.4E+02	n	2.2E+05	n	>S	2.9E+04	n		
Butane, 2,3-dimethyl-	79-29-8	1.5E+00	n	1.5E+02	n	>S 2.4E+03	n	>S	3.0E+02	n	>S	4.4E+00	n	4.4E+02	n	>S 3.3E+03	n	>S	4.3E+02	n	>S	
Butanoic acid (butyric acid)	107-92-6	1.2E+01	n	1.2E+03	n	1.9E+04	n		2.5E+03	n		3.7E+01	n	3.7E+03	n	2.7E+04	n		3.4E+03	n		
Butanol, 2-	78-92-2	2.4E+00	n	2.4E+02	n	5.2E+05	n	>S	6.8E+04	n		7.3E+00	n	7.3E+02	n	7.3E+05	n	>S	9.5E+04	n		
Butanol, 2-methyl-2-	75-85-4	2.4E-01	n	2.4E+01	n	6.3E+05	n	>S	8.1E+04	n	>S	7.3E-01	n	7.3E+01	n	8.8E+05	n	>S	1.1E+05	n	>S	
Butanol, n-	71-36-3	2.4E+00	n	2.4E+02	n	2.0E+05	n	>S	2.6E+04	n		7.3E+00	n	7.3E+02	n	2.8E+05	n	>S	3.6E+04	n		
Butene, 1-	106-98-9	1.5E+00	n	1.5E+02	n	1.0E+04	n	>S	1.3E+03	n	>S	4.4E+00	n	4.4E+02	n	>S 1.4E+04	n	>S	1.8E+03	n	>S	
Butene, cis-2-	590-18-1	1.5E+00	n	1.5E+02	n	1.4E+04	n	>S	1.9E+03	n	>S	4.4E+00	n	4.4E+02	n	>S 2.0E+04	n	>S	2.6E+03	n	>S	
Butene, trans-2-	624-64-6	1.5E+00	n	1.5E+02	n	1.4E+04	n	>S	1.9E+03	n	>S	4.4E+00	n	4.4E+02	n	>S 2.0E+04	n	>S	2.6E+03	n	>S	
Butoxy ethanol, 2- (Ethylene glycol monobutyl ether; EGBE)	111-76-2	1.2E+01	n	1.2E+03	n	1.0E+06	n	>S	1.0E+06	n	>S	3.7E+01	n	3.7E+03	n	1.0E+06	n	>S	1.0E+06	n	>S	
Butyl acetate	123-86-4	3.4E+00	n	3.4E+02	n	1.0E+04	n	>S	1.3E+03	n		1.0E+01	n	1.0E+03	n	1.5E+04	n	>S	1.9E+03	n		
Butyl acrylate	141-32-2	2.2E-01	n	2.2E+01	n	7.9E+02	n		1.0E+02	n		6.6E-01	n	6.6E+01	n	1.1E+03	n		1.4E+02	n		
Butyl benzyl phthalate	85-68-7	4.8E-01	c	4.8E+01	c	>S 1.2E+05	n	>S	1.6E+04	n	>S	1.1E+00	c	1.1E+02	c	>S 1.7E+05	n	>S	2.2E+04	n	>S	
Butyl ether, n- (dibutyl ether)	142-96-1	2.4E+00	n	2.4E+02	n	5.0E+03	n	>S	6.5E+02	n	>S	7.3E+00	n	7.3E+02	n	>S 7.0E+03	n	>S	9.1E+02	n	>S	
Butyl methacrylate	97-88-1	2.2E+00	n	2.2E+02	n	8.1E+04	n	>S	1.0E+04	n	>S	6.6E+00	n	6.6E+02	n	>S 1.1E+05	n	>S	1.5E+04	n	>S	
Butylate	2008-41-5	1.2E+00	n	1.2E+02	n	>S						3.7E+00	n	3.7E+02	n	>S						
Butylbenzene, n-	104-51-8	9.8E-01	n	9.8E+01	n	>S 3.6E+03	n	>S	4.7E+02	n	>S	2.9E+00	n	2.9E+02	n	>S 5.1E+03	n	>S	6.6E+02	n	>S	
Butylbenzene, sec-	135-98-8	9.8E-01	n	9.8E+01	n	>S 3.9E+03	n	>S	5.0E+02	n	>S	2.9E+00	n	2.9E+02	n	>S 5.4E+03	n	>S	7.0E+02	n	>S	
Butylbenzene, tert-	98-06-6	9.8E-01	n	9.8E+01	n	>S 2.5E+03	n	>S	3.2E+02	n	>S	2.9E+00	n	2.9E+02	n	>S 3.5E+03	n	>S	4.5E+02	n	>S	
Cacodylic acid	75-60-5	7.3E-02	n	7.3E+00	n							2.2E-01	n	2.2E+01	n							
Cadmium	7440-43-9	5.0E-03	m	>S 5.0E-01	m	>S						5.0E-03	m	>S 5.0E-01	m	>S						
Calcium*	7440-70-2																					
Caprolactam	105-60-2	1.2E+01	n	1.2E+03	n	2.4E+04	n		3.2E+03	n		3.7E+01	n	3.7E+03	n	3.4E+04	n		4.4E+03	n		
Captan	133-06-2	2.6E-01	c	2.6E+01	c	>S 5.6E+04	n	>S	7.2E+03	n	>S	5.8E-01	c	>S 5.8E+01	c	>S 7.8E+04	n	>S	1.0E+04	n	>S	
Carbaryl	63-25-2	2.4E+00	n	2.4E+02	n	>S 1.8E+05	n	>S	2.3E+04	n	>S	7.3E+00	n	7.3E+02	n	>S 2.5E+05	n	>S	3.3E+04	n	>S	
Carbazole	86-74-8	4.6E-02	c	4.6E+00	c	>S						1.0E-01	c	1.0E+01	c	>S						
Carbofuran	1563-66-2	4.0E-02	m	4.0E+00	m	3.8E+03	n	>S	4.9E+02	n		4.0E-02	m	4.0E+00	m	5.3E+03	n	>S	6.8E+02	n		
Carbon disulfide	75-15-0	2.4E+00	n	2.4E+02	n	4.9E+03	n	>S	6.3E+02	n		7.3E+00	n	7.3E+02	n	6.8E+03	n	>S	8.8E+02	n		
Carbon tetrachloride	56-23-5	5.0E-03	m	5.0E-01	m	7.9E+00	c		1.0E+00	c		5.0E-03	m	5.0E-01	m	1.3E+01	c		1.7E+00	c		
Carbophenothion	786-19-6	3.2E-01	n	3.2E+01	n	>S						9.5E-01	n	9.5E+01	n	>S						
Carbosulfan	55285-14-8	2.4E-01	n	2.4E+01	n	>S						7.3E-01	n	>S 7.3E+01	n	>S						
Carboxin	5234-68-4	2.4E+00	n	2.4E+02	n	>S						7.3E+00	n	7.3E+02	n	>S						
Chloral	75-87-6	2.4E+00	n	2.4E+02	n	8.4E+04	n		1.1E+04	n		7.3E+00	n	7.3E+02	n	1.2E+05	n		1.5E+04	n		

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		MCL[5] (mg/L)
Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)	302-17-0	2.4E+00	n	2.4E+02	n	1.1E+05	n	1.5E+04	n			7.3E+00	n	7.3E+02	n	1.6E+05	n	2.2E+04	n		
Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)	133-90-4	3.7E-01	n	3.7E+01	n							1.1E+00	n	1.1E+02	n						
Chlordane (technical)	12789-03-6	2.0E-03	m	2.0E-01	m >S	7.7E+02	c >S	9.9E+01	c >S			2.0E-03	m	2.0E-01	m >S	1.3E+03	c >S	1.7E+02	c >S		
Chlordane, cis- (alpha chlordane)	5103-71-9	2.6E-03	c	2.6E-01	c >S	1.5E+02	c >S	2.0E+01	c >S			5.8E-03	c	5.8E-01	c >S	2.6E+02	c >S	3.3E+01	c >S		
Chlordane, gamma	57-74-9	2.6E-03	c	2.6E-01	c >S	1.5E+02	c >S	2.0E+01	c >S			5.8E-03	c	5.8E-01	c >S	2.6E+02	c >S	3.3E+01	c >S		
Chlorfenvinphos	470-90-6	1.7E-02	n	1.7E+00	n							5.1E-02	n	5.1E+00	n						
Chloride*	16887-00-6																				2.5E+02
Chlorine	7782-50-5	4.0E+00	m	4.0E+02	m	2.2E+00	n GW I	2.8E-01	n GW I			4.0E+00	m	4.0E+02	m	3.1E+00	n GW I	4.0E-01	n GW Ing		
Chloro-1,3-butadiene, 2-	126-99-8					2.5E+01	n	3.3E+00	n							3.6E+01	n	4.6E+00	n		
Chloro-2-propanol, 1-	127-00-4	4.9E-01	n	4.9E+01	n							1.5E+00	n	1.5E+02	n						
Chloro-3-methylphenol, 4-	59-50-7	1.2E-01	n	1.2E+01	n	6.0E+05	n >S	7.7E+04	n >S			3.7E-01	n	3.7E+01	n	8.4E+05	n >S	1.1E+05	n >S		
Chloroaniline, p-	106-47-8	4.6E-03	c	4.6E-01	c	6.8E+04	n >S	8.8E+03	n >S			1.0E-02	c	1.0E+00	c	9.5E+04	n >S	1.2E+04	n >S		
Chlorobenzene	108-90-7	1.0E-01	m	1.0E+01	m	1.2E+03	n >S	1.5E+02	n			1.0E-01	m	1.0E+01	m	1.6E+03	n >S	2.1E+02	n		
Chlorobenzilate	510-15-6	3.4E-03	c	3.4E-01	c	7.0E+03	c >S	9.0E+02	c >S			7.6E-03	c	7.6E-01	c	1.2E+04	c >S	1.5E+03	c >S		
Chlorobromomethane (bromochloromethane)	74-97-5	9.8E-01	n	9.8E+01	n	2.2E+03	n	2.9E+02	n			2.9E+00	n	2.9E+02	n	3.1E+03	n	4.1E+02	n		
Chlorodifluoromethane	75-45-6					1.7E+05	n >S	2.2E+04	n >S							2.4E+05	n >S	3.1E+04	n >S		
Chloroethane (ethyl chloride)	75-00-3	9.8E+00	n	9.8E+02	n	1.2E+05	n >S	1.5E+04	n			2.9E+01	n	2.9E+03	n	1.6E+05	n >S	2.1E+04	n >S		
Chloroethanol, 2-	107-07-3	9.8E+00	n	9.8E+02	n	3.6E+04	n	4.6E+03	n			2.9E+01	n	2.9E+03	n	5.0E+04	n	6.5E+03	n		
chloroethylvinylether)	110-75-8	8.3E-04	c	8.3E-02	c	2.0E+01	n	2.5E+00	n			1.9E-03	c	1.9E-01	c	2.7E+01	n	3.5E+00	n		
Chloroform[6]	67-66-3	2.4E-01	n	2.4E+01	n	2.0E+01	c	2.6E+00	c			7.3E-01	n	7.3E+01	n	3.3E+01	c	4.3E+00	c		
Chlorohexane, 1-	544-10-5	9.8E-01	n	9.8E+01	n >S	7.3E+03	n >S	9.4E+02	n >S			2.9E+00	n	2.9E+02	n >S	1.0E+04	n >S	1.3E+03	n >S		
Chloromethane (methyl chloride)	74-87-3	7.0E-02	c	7.0E+00	c	3.6E+01	c	4.7E+00	c			1.6E-01	c	1.6E+01	c	6.1E+01	c	7.9E+00	c		
Chloronaphthalene, 1- (Chloronaphthalene, alpha)	90-13-1	2.0E+00	n	2.0E+02	n >S							5.8E+00	n	5.8E+02	n >S						
Chloronaphthalene, 2- (chloronaphthalene, beta)	91-58-7	2.0E+00	n	2.0E+02	n >S							5.8E+00	n	5.8E+02	n >S						
nitrobenzene)	100-00-5	2.4E-02	n	2.4E+00	n	7.6E+02	n >S	9.9E+01	n			7.3E-02	n	7.3E+00	n	1.1E+03	n >S	1.4E+02	n		
Chlorophenol, 2-	95-57-8	1.2E-01	n	1.2E+01	n	6.2E+04	n >S	8.0E+03	n			3.7E-01	n	3.7E+01	n	8.6E+04	n >S	1.1E+04	n		
Chlorophenol, 3-	108-43-0	1.2E-01	n	1.2E+01	n	5.9E+05	n >S	7.7E+04	n >S			3.7E-01	n	3.7E+01	n	8.3E+05	n >S	1.1E+05	n >S		
Chlorophenol, 4-	106-48-9	1.2E-01	n	1.2E+01	n	5.8E+05	n >S	7.5E+04	n >S			3.7E-01	n	3.7E+01	n	8.2E+05	n >S	1.1E+05	n >S		
Chlorophenyl phenylether, 4-	7005-72-3	6.1E-05	c	6.1E-03	c	1.2E+00	c	1.6E-01	c			1.4E-04	c	1.4E-02	c	2.1E+00	c >S	2.7E-01	c		
Chloropropane, 2-	75-29-6	7.3E-01	n	7.3E+01	n	4.7E+02	n	6.0E+01	n			2.2E+00	n	2.2E+02	n	6.5E+02	n	8.5E+01	n		
Chlorothalonil	1897-45-6	8.3E-02	c	8.3E+00	c							1.9E-01	c	1.9E+01	c						
Chlorotoluene, o- (2-chlorotoluene)	95-49-8	4.9E-01	n	4.9E+01	n	7.7E+03	n >S	9.9E+02	n >S			1.5E+00	n	1.5E+02	n	1.1E+04	n >S	1.4E+03	n >S		
Chlorotoluene, p- (4-chlorotoluene)	106-43-4	1.7E+00	n	1.7E+02	n >S	7.9E+00	n	1.0E+00	n GW I			5.1E+00	n	5.1E+02	n >S	1.1E+01	n	1.4E+00	n GW Ing		
Chlorpyrifos	2921-88-2	7.3E-02	n	7.3E+00	n >S	1.6E+03	n >S	2.1E+02	n >S			2.2E-01	n	2.2E+01	n >S	2.2E+03	n >S	2.9E+02	n >S		
Chromium (III)	16065-83-1	1.0E-01	m >S	1.0E+01	m >S							1.0E-01	m >S	1.0E+01	m >S						
Chromium (total)	7440-47-3	1.0E-01	m >S	1.0E+01	m >S							1.0E-01	m >S	1.0E+01	m >S						
Chromium (VI)	18540-29-9	1.0E-01	m >S	1.0E+01	m >S							1.0E-01	m >S	1.0E+01	m >S						
Chrysene	218-01-9	1.3E-01	c >S	1.3E+01	c >S	5.8E+05	c >S	7.5E+04	c >S			2.8E-01	c >S	2.8E+01	c >S	9.8E+05	c >S	1.3E+05	c >S		
Cobalt	7440-48-4	7.3E-03	n >S	7.3E-01	n >S							2.2E-02	n >S	2.2E+00	n >S						

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
Copolymer acrylamide	69418-26-4	4.9E-03	n	4.9E-01	n	4.8E+02	n	6.5E+01	n			1.5E-02	n	1.5E+00	n	6.8E+02	n	9.0E+01	n			
Copper	7440-50-8	1.3E+00	a >S	1.3E+02	a >S							1.3E+00	a >S	1.3E+02	a >S							1.0E+00
Coronene	191-07-1	4.9E-02	n >S	4.9E+00	n >S							1.5E-01	n >S	1.5E+01	n >S							
Coumaphos	56-72-4	1.7E-01	n	1.7E+01	n >S							5.1E-01	n >S	5.1E+01	n >S							
Cresol	1319-77-3	1.2E+00	n	1.2E+02	n	1.2E+05	n >S	1.6E+04	n			3.7E+00	n	3.7E+02	n	1.7E+05	n >S	2.2E+04	n			
Cresol, m- (3-methylphenol)	108-39-4	1.2E+00	n	1.2E+02	n	1.2E+05	n >S	1.6E+04	n			3.7E+00	n	3.7E+02	n	1.7E+05	n >S	2.2E+04	n			
Cresol, o- (2-methylphenol)	95-48-7	1.2E+00	n	1.2E+02	n	1.0E+05	n >S	1.3E+04	n			3.7E+00	n	3.7E+02	n	1.4E+05	n >S	1.8E+04	n			
Cresol, p- (4-methylphenol)	106-44-5	1.2E-01	n	1.2E+01	n	1.2E+05	n >S	1.5E+04	n			3.7E-01	n	3.7E+01	n	1.7E+05	n >S	2.1E+04	n			
Crotonaldehyde	123-73-9	4.8E-04	c	4.8E-02	c	6.3E+03	n	8.2E+02	n			1.1E-03	c	1.1E-01	c	8.9E+03	n	1.1E+03	n			
Cumene (isopropylbenzene)	98-82-8	2.4E+00	n	2.4E+02	n >S	4.4E+03	n >S	5.7E+02	n >S			7.3E+00	n	7.3E+02	n >S	6.2E+03	n >S	8.0E+02	n >S			
Cyanazine	21725-46-2	1.1E-03	c	1.1E-01	c							2.4E-03	c	2.4E-01	c							
Cyanide	57-12-5	2.0E-01	m	2.0E+01	m							2.0E-01	m	2.0E+01	m							
Cyanogen	460-19-5	9.8E-01	n	9.8E+01	n	1.9E+02	n	2.5E+01	n			2.9E+00	n	2.9E+02	n	2.7E+02	n	3.5E+01	n			
Cycloate	1134-23-2	1.3E+00	n	1.3E+02	n >S							4.0E+00	n	4.0E+02	n >S							
Cyclohexane	110-82-7	1.2E+02	n >S	1.2E+04	n >S	5.9E+03	n >S	7.7E+02	n >S			3.7E+02	n >S	3.7E+04	n >S	8.3E+03	n >S	1.1E+03	n >S			
Cyclohexanol	108-93-0	1.2E+02	n >S	1.2E+04	n >S	1.0E+06	n >S	3.6E+05	n >S			3.7E+02	n >S	3.7E+04	n >S	1.0E+06	n >S	5.0E+05	n >S			
Cyclohexanone	108-94-1	1.2E+02	n	1.2E+04	n	2.0E+05	n >S	2.6E+04	n >S			3.7E+02	n	3.7E+04	n >S	2.8E+05	n >S	3.6E+04	n >S			
Cyclohexene-1-methanol, 3-	1679-51-2	4.9E-01	n	4.9E+01	n							1.5E+00	n	1.5E+02	n							
Cyclopentane, methyl-	96-37-7	2.4E+00	n	2.4E+02	n >S	6.8E+02	n >S	8.8E+01	n >S			7.3E+00	n	7.3E+02	n >S	9.5E+02	n >S	1.2E+02	n >S			
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	1.2E+00	n	1.2E+02	n	1.0E+06	n >S	1.0E+06	n >S			3.7E+00	n	3.7E+02	n	1.0E+06	n >S	1.0E+06	n >S			
Cyclotrimethylenetrinitramine (RDX)	121-82-4	8.3E-03	c	8.3E-01	c	1.2E+03	n >S	1.5E+02	n >S			1.9E-02	c	1.9E+00	c	1.6E+03	n >S	2.1E+02	n >S			
Cymene (isopropyltoluene)	99-87-6	2.4E+00	n	2.4E+02	n >S	4.6E+03	n >S	5.9E+02	n >S			7.3E+00	n	7.3E+02	n >S	6.4E+03	n >S	8.3E+02	n >S			
Cymoxanil	57966-95-7	3.2E-01	n	3.2E+01	n							9.5E-01	n	9.5E+01	n							
Dacthal (DCPA)	1861-32-1	2.4E-01	n >S	2.4E+01	n >S							7.3E-01	n >S	7.3E+01	n >S							
Dalapon, sodium salt (2,2-dichloropropanoic	75-99-0	2.0E-01	m	2.0E+01	m							2.0E-01	m	2.0E+01	m							
DDD	72-54-8	3.8E-03	c	3.8E-01	c >S							8.5E-03	c	8.5E-01	c >S							
DDE	72-55-9	2.7E-03	c	2.7E-01	c >S							6.0E-03	c	6.0E-01	c >S							
DDT	50-29-3	2.7E-03	c	2.7E-01	c >S	6.2E+02	c >S	8.1E+01	c >S			6.0E-03	c >S	6.0E-01	c >S	1.0E+03	c >S	1.4E+02	c >S			
Demeton	8065-48-3	9.8E-04	n	9.8E-02	n							2.9E-03	n	2.9E-01	n							
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	9.8E-01	n	9.8E+01	n							2.9E+00	n	2.9E+02	n							
Diallate	2303-16-4	1.5E-02	c	1.5E+00	c							3.4E-02	c	3.4E+00	c							
Diazinon	333-41-5	2.2E-02	n	2.2E+00	n	4.0E+03	n >S	5.2E+02	n >S			6.6E-02	n	6.6E+00	n	5.6E+03	n >S	7.2E+02	n >S			
Dibenz(a,h)acridine	226-36-8	7.6E-04	c >S	7.6E-02	c >S	8.1E+03	c >S	1.1E+03	c >S			1.7E-03	c >S	1.7E-01	c >S	1.4E+04	c >S	1.8E+03	c >S			
Dibenz(a,j)acridine	224-42-0	1.3E-03	c >S	1.3E-01	c >S	1.0E+04	c >S	1.3E+03	c >S			2.8E-03	c >S	2.8E-01	c >S	1.7E+04	c >S	2.2E+03	c >S			
Dibenz-a,h-anthracene	53-70-3	2.0E-04	c	2.0E-02	c >S	1.0E+03	c >S	1.3E+02	c >S			2.8E-04	c	2.8E-02	c >S	1.8E+03	c >S	2.3E+02	c >S			
Dibenzo(a,e)pyrene	192-65-4	1.3E-04	c >S	1.3E-02	c >S	1.0E+03	c >S	1.3E+02	c >S			2.8E-04	c >S	2.8E-02	c >S	1.7E+03	c >S	2.2E+02	c >S			
Dibenzo(a,h)pyrene	189-64-0	1.3E-05	c	1.3E-03	c >S	1.0E+02	c >S	1.3E+01	c >S			2.8E-05	c >S	2.8E-03	c >S	1.7E+02	c >S	2.2E+01	c >S			
Dibenzo(a,i)pyrene	189-55-9	1.3E-05	c	1.3E-03	c >S	1.0E+02	c >S	1.3E+01	c >S			2.8E-05	c	2.8E-03	c >S	1.7E+02	c >S	2.2E+01	c >S			
Dibenzofuran	132-64-9	9.8E-02	n	9.8E+00	n >S							2.9E-01	n	2.9E+01	n >S							
Dibenzothiophene	132-65-0	7.3E-02	n	7.3E+00	n >S							2.2E-01	n >S	2.2E+01	n >S							
Dibromo-3-chloropropane, 1,2-	96-12-8	2.0E-04	m	2.0E-02	m	6.2E-01	c	8.0E-02	c			2.0E-04	m	2.0E-02	m	1.0E+00	c	1.3E-01	c			

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)
(chlorodibromomethane)[6]	124-48-1	1.1E-02	c	1.1E+00	c							2.4E-02	c	2.4E+00	c						
Dibromofluoromethane	1868-53-7	4.9E+00	n	4.9E+02	n	1.3E+05	n	>S	1.7E+04	n	>S	1.5E+01	n	1.5E+03	n	1.8E+05	n	>S	2.4E+04	n	>S	
Dicamba	1918-00-9	7.3E-01	n	7.3E+01	n	3.0E+05	n	>S	3.9E+04	n	>S	2.2E+00	n	2.2E+02	n	4.2E+05	n	>S	5.5E+04	n	>S	
Dichlormid	37764-25-3	6.1E-01	n	6.1E+01	n							1.8E+00	n	1.8E+02	n							
Dichloro-2-butene, 1,4-	764-41-0					6.7E-01	c		8.7E-02	c						1.1E+00	c		1.5E-01	c		
Dichloro-2-butene, 1,4- trans	110-57-6					6.5E-01	c		8.5E-02	c						1.1E+00	c		1.4E-01	c		
Dichlorobenzene, 1,2-	95-50-1	6.0E-01	m	6.0E+01	m	1.2E+03	n	>S	1.5E+02	n		6.0E-01	m	6.0E+01	m	1.6E+03	n	>S	2.1E+02	n	>S	
Dichlorobenzene, 1,3-	541-73-1	7.3E-01	n	7.3E+01	n	1.9E+02	n	>S	2.5E+01	n		2.2E+00	n	2.2E+02	n	>S 2.7E+02	n	>S	3.4E+01	n		
Dichlorobenzene, 1,4-	106-46-7	7.5E-02	m	7.5E+00	m	3.6E+03	n	>S	4.6E+02	n	>S	7.5E-02	m	7.5E+00	m	5.0E+03	n	>S	6.5E+02	n	>S	
Dichlorobenzidine, 3,3-	91-94-1	2.0E-03	c	2.0E-01	c							4.5E-03	c	4.5E-01	c							
Dichlorobutane, 2,3-	7581-97-7	2.4E-01	n	2.4E+01	n	1.4E+02	n		1.9E+01	n		7.3E-01	n	7.3E+01	n	2.0E+02	n		2.6E+01	n		
Dichlorodifluoromethane	75-71-8	4.9E+00	n	4.9E+02	n >S	3.0E+03	n	>S	3.8E+02	n	>S	1.5E+01	n	1.5E+03	n >S	4.2E+03	n	>S	5.4E+02	n	>S	
Dichloroethane, 1,1-	75-34-3	4.9E+00	n	4.9E+02	n	7.2E+03	n	>S	9.3E+02	n		1.5E+01	n	1.5E+03	n	1.0E+04	n	>S	1.3E+03	n		
Dichloroethane, 1,2-	107-06-2	5.0E-03	m	5.0E-01	m	3.3E+01	c		4.3E+00	c		5.0E-03	m	5.0E-01	m	5.5E+01	c		7.2E+00	c		
Dichloroethylene, 1,1-	75-35-4	7.0E-03	m	7.0E-01	m	1.7E+03	n		2.2E+02	n		7.0E-03	m	7.0E-01	m	2.3E+03	n		3.0E+02	n		
Dichloroethylene, cis-1,2-	156-59-2	7.0E-02	m	7.0E+00	m	1.6E+04	n	>S	2.1E+03	n		7.0E-02	m	7.0E+00	m	2.3E+04	n	>S	2.9E+03	n		
Dichloroethylene, trans-1,2	156-60-5	1.0E-01	m	1.0E+01	m	7.7E+02	n		9.9E+01	n		1.0E-01	m	1.0E+01	m	1.1E+03	n		1.4E+02	n		
Dichlorofluoromethane	75-43-4	4.9E+00	n	4.9E+02	n	7.2E+02	n		9.3E+01	n		1.5E+01	n	1.5E+03	n	1.0E+03	n		1.3E+02	n		
Dichlorophenol, 2,3-	576-24-9	7.3E-02	n	7.3E+00	n	1.0E+06	n	>S	1.4E+05	n	>S	2.2E-01	n	2.2E+01	n	1.0E+06	n	>S	2.0E+05	n	>S	
Dichlorophenol, 2,4-	120-83-2	7.3E-02	n	7.3E+00	n	5.4E+05	n	>S	7.0E+04	n	>S	2.2E-01	n	2.2E+01	n	7.6E+05	n	>S	9.8E+04	n	>S	
Dichlorophenol, 2,5-	583-78-8	7.3E-02	n	7.3E+00	n	1.0E+06	n	>S	1.4E+05	n	>S	2.2E-01	n	2.2E+01	n	1.0E+06	n	>S	2.0E+05	n	>S	
Dichlorophenol, 2,6-	87-65-0	2.4E-02	n	2.4E+00	n	3.7E+05	n	>S	4.7E+04	n	>S	7.3E-02	n	7.3E+00	n	5.1E+05	n	>S	6.6E+04	n	>S	
Dichlorophenol, 3,4-	95-77-2	7.3E-02	n	7.3E+00	n	1.0E+06	n	>S	1.6E+05	n	>S	2.2E-01	n	2.2E+01	n	1.0E+06	n	>S	2.3E+05	n	>S	
Dichlorophenol, 3,5-	591-35-5	7.3E-02	n	7.3E+00	n	1.0E+06	n	>S	1.6E+05	n	>S	2.2E-01	n	2.2E+01	n	1.0E+06	n	>S	2.2E+05	n	>S	
Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)	94-82-6	2.0E-01	n	2.0E+01	n							5.8E-01	n	5.8E+01	n							
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	94-75-7	7.0E-02	m	7.0E+00	m	3.2E+04	n	>S	4.2E+03	n	>S	7.0E-02	m	7.0E+00	m	4.4E+04	n	>S	5.9E+03	n	>S	
Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)	120-36-5	2.4E-01	n	2.4E+01	n							7.3E-01	n	7.3E+01	n							
Dichloropropane, 1,2-	78-87-5	5.0E-03	m	5.0E-01	m	1.2E+02	n		1.5E+01	n		5.0E-03	m	5.0E-01	m	1.6E+02	n		2.1E+01	n		
Dichloropropane, 1,3-	142-28-9	9.1E-03	c	9.1E-01	c	2.5E+02	c		3.3E+01	c		2.0E-02	c	2.0E+00	c	4.3E+02	c		5.5E+01	c		
Dichloropropane, 2,2-	594-20-7	1.3E-02	c	1.3E+00	c	5.7E+01	n		7.3E+00	n		3.0E-02	c	3.0E+00	c	7.9E+01	n		1.0E+01	n		
Dichloropropanol, 2,3-	616-23-9	7.3E-02	n	7.3E+00	n							2.2E-01	n	2.2E+01	n							
Dichloropropene, 1,1-	563-58-6	9.1E-03	c	9.1E-01	c	1.9E+01	c		2.5E+00	c		2.0E-02	c	2.0E+00	c	3.2E+01	c		4.2E+00	c		
Dichloropropene, 1,3- (mixed isomers)	542-75-6	9.1E-03	c	9.1E-01	c	1.8E+02	c		2.3E+01	c		2.0E-02	c	2.0E+00	c	3.0E+02	c		3.8E+01	c		
Dichloropropene, cis 1,3-	10061-01-5	1.7E-03	c	1.7E-01	c	2.3E+02	n		3.0E+01	n		3.8E-03	c	3.8E-01	c	3.2E+02	n		4.2E+01	n		
Dichloropropene, trans 1,3-	10061-02-6	9.1E-03	c	9.1E-01	c	1.9E+02	c		2.5E+01	c		2.0E-02	c	2.0E+00	c	3.2E+02	c		4.1E+01	c		
Dichlorvos	62-73-7	3.1E-03	c	3.1E-01	c	1.0E+04	n		1.3E+03	n		7.0E-03	c	7.0E-01	c	1.4E+04	n		1.8E+03	n		
Dicrotophos (bidrin)	141-66-2	2.4E-03	n	2.4E-01	n							7.3E-03	n	7.3E-01	n							
Dicyclopentadiene	77-73-6	2.0E-01	n	2.0E+01	n							5.8E-01	n	5.8E+01	n							
Dieldrin	60-57-1	5.7E-05	c	5.7E-03	c	1.3E+02	c	>S	1.6E+01	c	>S	1.3E-04	c	1.3E-02	c	2.1E+02	c	>S	2.8E+01	c	>S	
Diethanolamine	111-42-2	1.2E-02	n	1.2E+00	n	1.5E+05	n		1.2E+05	n		3.7E-02	n	3.7E+00	n	2.2E+05	n		1.6E+05	n		
Diethyl phthalate	84-66-2	2.0E+01	n	2.0E+03	n >S	1.4E+05	n	>S	1.8E+04	n	>S	5.8E+01	n	5.8E+03	n >S	1.9E+05	n	>S	2.5E+04	n	>S	

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial										
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
Diethylene glycol	111-46-6	4.9E+01	n	4.9E+03	n							1.5E+02	n	1.5E+04	n							
Diethylene glycol monobutyl ether	112-34-5	2.4E-01	n	2.4E+01	n	6.4E+05	n	>S	8.3E+04	n	>S	7.3E-01	n	7.3E+01	n	9.0E+05	n	>S	1.2E+05	n	>S	
Diethylhexyl adipate	103-23-1	4.0E-01	m	>S	4.0E+01	m	>S	1.7E+03	n	>S	2.1E+02	n	>S	4.0E-01	m	>S	4.0E+01	m	>S	2.3E+03	n	>S	3.0E+02	n	>S	
Diethylstilbestrol	56-53-1	1.9E-07	c		1.9E-05	c								4.3E-07	c		4.3E-05	c							
Diisobutylene (trimethyl-1-pentene, 2,4,4-)	107-39-1	1.5E+00	n		1.5E+02	n	>S	2.3E+01	n	>S	3.0E+00	n		4.4E+00	n	>S	4.4E+02	n	>S	3.2E+01	n	>S	4.2E+00	n	>S	
Diisopropylbenzene, p-	100-18-5	2.4E-01	n		2.4E+01	n	>S	1.3E+03	n	>S	1.7E+02	n	>S	7.3E-01	n		7.3E+01	n	>S	1.8E+03	n	>S	2.3E+02	n	>S	
Diisopropyl ether (2,2'-oxybis-propane)	108-20-3	2.4E+00	n		2.4E+02	n		1.1E+04	n	>S	1.4E+03	n		7.3E+00	n		7.3E+02	n		1.6E+04	n	>S	2.0E+03	n		
Dimethenamid	87674-68-8	3.7E-01	n		3.7E+01	n								1.1E+00	n		1.1E+02	n							
Dimethoate	60-51-5	4.9E-03	n		4.9E-01	n								1.5E-02	n		1.5E+00	n							
Dimethoxybenzidine, 3,3'-	119-90-4	6.5E-02	c		6.5E+00	c								1.5E-01	c		1.5E+01	c							
Dimethylphenethylamine, alpha, alpha-	122-09-8	4.9E-02	n		4.9E+00	n		1.0E+06	n	>S	9.4E+05	n	>S	1.5E-01	n		1.5E+01	n		1.0E+06	n	>S	1.0E+06	n	>S	
Dimethyl phenol, 2,4-	105-67-9	4.9E-01	n		4.9E+01	n		1.6E+05	n	>S	2.1E+04	n	>S	1.5E+00	n		1.5E+02	n		2.3E+05	n	>S	3.0E+04	n	>S	
Dimethylaminoazobenzene, p-	60-11-7	2.4E-04	n		2.4E-02	n								7.3E-04	n		7.3E-02	n							
Dimethylbenz-a-anthracene, 7,12-	57-97-6	3.7E-06	c		3.7E-04	c		3.3E+01	c	>S	4.3E+00	c	>S	8.2E-06	c		8.2E-04	c		5.5E+01	c	>S	7.2E+00	c	>S	
Dimethylbenzidine, 3,3'-	119-93-7	8.3E-05	c		8.3E-03	c								1.9E-04	c		1.9E-02	c							
Dimethylnaphthalene, 1,3-	575-41-7	9.8E-01	n		9.8E+01	n	>S							2.9E+00	n		2.9E+02	n	>S						
Dimethylphthalate	131-11-3	2.0E+01	n		2.0E+03	n		1.1E+05	n	>S	1.4E+04	n	>S	5.8E+01	n		5.8E+03	n	>S	1.5E+05	n	>S	1.9E+04	n	>S	
Di-n-butyl phthalate	84-74-2	2.4E+00	n		2.4E+02	n	>S	7.2E+04	n	>S	9.3E+03	n	>S	7.3E+00	n		7.3E+02	n	>S	1.0E+05	n	>S	1.3E+04	n	>S	
Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-)	534-52-1	2.4E-03	n		2.4E-01	n		8.4E+03	n	>S	1.1E+03	n		7.3E-03	n		7.3E-01	n		1.2E+04	n	>S	1.5E+03	n		
Dinitrobenzene, 1,3- (dinitrobenzene, 2,4-)	99-65-0	2.4E-03	n		2.4E-01	n		1.9E+04	n	>S	2.5E+03	n	>S	7.3E-03	n		7.3E-01	n		2.7E+04	n	>S	3.4E+03	n	>S	
Dinitrobenzene, 1,4-	100-25-4	2.4E-03	n		2.4E-01	n		2.6E+04	n	>S	3.4E+03	n	>S	7.3E-03	n		7.3E-01	n		3.6E+04	n	>S	4.7E+03	n	>S	
Dinitrophenol, 2,4-	51-28-5	4.9E-02	n		4.9E+00	n								1.5E-01	n		1.5E+01	n							
Dinitrophenol, 2,5-	329-71-5	4.9E-02	n		4.9E+00	n								1.5E-01	n		1.5E+01	n							
Dinitrotoluene, 2,4-	121-14-2	1.3E-03	c		1.3E-01	c		1.2E+03	n	>S	1.6E+02	n		3.0E-03	c		3.0E-01	c		1.7E+03	n	>S	2.2E+02	n		
Dinitrotoluene, 2,6-	606-20-2	1.3E-03	c		1.3E-01	c		3.1E+03	n	>S	4.1E+02	n	>S	3.0E-03	c		3.0E-01	c		4.4E+03	n	>S	5.7E+02	n	>S	
Di-n-octyl phthalate	117-84-0	4.9E-01	n	>S	4.9E+01	n	>S	9.9E+03	n	>S	1.3E+03	n	>S	1.5E+00	n	>S	1.5E+02	n	>S	1.4E+04	n	>S	1.8E+03	n	>S	
Dinoseb	88-85-7	7.0E-03	m		7.0E-01	m								7.0E-03	m		7.0E-01	m							
Dioxane 1,4-	123-91-1	8.3E-02	c		8.3E+00	c		1.5E+05	n		1.9E+04	n		1.9E-01	c		1.9E+01	c		2.1E+05	n		2.7E+04	n		
Diphenyl ether	101-84-8	1.5E-01	n		1.5E+01	n	>S	9.0E+02	n	>S	1.2E+02	n	>S	4.5E-01	n		4.5E+01	n	>S	1.3E+03	n	>S	1.6E+02	n	>S	
Diphenylamine	122-39-4	6.1E-01	n		6.1E+01	n		5.6E+04	n	>S	7.2E+03	n	>S	1.8E+00	n		1.8E+02	n		7.8E+04	n	>S	1.0E+04	n	>S	
Diphenylhydrazine, 1,2-	122-66-7	1.1E-03	c		1.1E-01	c		3.8E+03	c	>S	4.9E+02	c		2.6E-03	c		2.6E-01	c		6.4E+03	c	>S	8.3E+02	c		
Dipropylene glycol	110-98-5	2.9E+00	n		2.9E+02	n		1.0E+06	n	>S	4.7E+05	n		8.8E+00	n		8.8E+02	n		1.0E+06	n	>S	6.5E+05	n		
Diquat	85-00-7	2.0E-02	m		2.0E+00	m		4.2E+04	n		3.9E+04	n		2.0E-02	m		2.0E+00	m		5.9E+04	n		5.5E+04	n		
Disodium iminodiacetate (iminodiacetic acid, disodium salt)	142-73-4	2.4E-01	n		2.4E+01	n								7.3E-01	n		7.3E+01	n							
Disodium iminodiacetate (iminodiacetic acid, disodium salt)	928-72-3	2.4E-01	n		2.4E+01	n								7.3E-01	n		7.3E+01	n							
Disulfoton	298-04-4	9.8E-04	n		9.8E-02	n		3.5E+02	n	>S	4.5E+01	n	>S	2.9E-03	n		2.9E-01	n		4.9E+02	n	>S	6.3E+01	n	>S	
Diuron	330-54-1	4.9E-02	n		4.9E+00	n		3.9E+05	n	>S	5.0E+04	n	>S	1.5E-01	n		1.5E+01	n		5.4E+05	n	>S	7.0E+04	n	>S	
Dodecylphenol, 4-	27193-86-8	1.2E+00	n	>S	1.2E+02	n	>S	6.4E+05	n	>S	8.2E+04	n	>S	3.7E+00	n	>S	3.7E+02	n	>S	8.9E+05	n	>S	1.2E+05	n	>S	
Dodecylphenol, 4-	104-43-8	1.2E+00	n	>S	1.2E+02	n	>S	6.4E+05	n	>S	8.2E+04	n	>S	3.7E+00	n	>S	3.7E+02	n	>S	8.9E+05	n	>S	1.2E+05	n	>S	

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
						$^{Air}GW_{Inh-V}$										$^{Air}GW_{Inh-V}$					Secondary
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		0.5 acre source area		$^{Air}GW_{Inh-V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		0.5 acre source area		30 acre source area			MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
Endosulfan	115-29-7	1.5E-01	n	1.5E+01	n >S	1.2E+03	n >S	1.5E+02	n >S			4.4E-01	n	4.4E+01	n >S	1.6E+03	n >S	2.1E+02	n >S		
Endosulfan I	959-98-8	4.9E-02	n	4.9E+00	n >S	9.1E+02	n >S	1.2E+02	n >S			1.5E-01	n	1.5E+01	n >S	1.3E+03	n >S	1.6E+02	n >S		
Endosulfan II	33213-65-9	1.5E-01	n	1.5E+01	n >S							4.4E-01	n	4.4E+01	n >S						
Endosulfan sulfate	1031-07-8	1.5E-01	n >S	1.5E+01	n >S							4.4E-01	n >S	4.4E+01	n >S						
Endothall	145-73-3	1.0E-01	m	1.0E+01	m							1.0E-01	m	1.0E+01	m						
Endrin	72-20-8	2.0E-03	m	2.0E-01	m	3.3E+03	n >S	4.2E+02	n >S			2.0E-03	m	2.0E-01	m	4.6E+03	n >S	5.9E+02	n >S		
Endrin aldehyde	7421-93-4	7.3E-03	n	7.3E-01	n >S							2.2E-02	n >S	2.2E+00	n >S						
Endrin ketone	53494-70-5	7.3E-03	n	7.3E-01	n	2.8E+03	n >S	3.6E+02	n >S			2.2E-02	n	2.2E+00	n >S	3.9E+03	n >S	5.1E+02	n >S		
Endrin ketone	N-McG/D	7.3E-03	n	7.3E-01	n	2.8E+03	n >S	3.6E+02	n >S			2.2E-02	n	2.2E+00	n >S	3.9E+03	n >S	5.1E+02	n >S		
Epichlorohydrin	106-89-8	9.2E-02	c	9.2E+00	c	7.1E+02	n	9.1E+01	n			2.1E-01	c	2.1E+01	c	9.9E+02	n	1.3E+02	n		
EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioate)	2104-64-5	2.4E-04	n	2.4E-02	n							7.3E-04	n	7.3E-02	n						
Esfenvalerate	66230-04-4	4.9E-02	n >S	4.9E+00	n >S							1.5E-01	n >S	1.5E+01	n >S						
Ethalfluralin (sonolan)	55283-68-6	1.0E-02	c	1.0E+00	c							2.3E-02	c	2.3E+00	c						
Ethanol	64-17-5	8.1E+02	n	8.1E+04	n	1.0E+06	n >S	5.6E+05	n >S			2.4E+03	n	2.4E+05	n	1.0E+06	n >S	7.8E+05	n >S		
Ethanol, 2-amino-	141-43-5	4.2E-02	n	4.2E+00	n	1.4E+05	n	1.8E+04	n			1.2E-01	n	1.2E+01	n	1.9E+05	n	2.5E+04	n		
Ethanol, 2-(2-aminoethoxy)-	929-06-6	1.2E-02	n	1.2E+00	n	9.7E+05	n	1.3E+05	n			3.7E-02	n	3.7E+00	n	1.0E+06	n >S	1.8E+05	n		
Ethanol, 2-(2-ethoxyethoxy)-	111-90-0	4.9E+01	n	4.9E+03	n							1.5E+02	n	1.5E+04	n						
Ethion	563-12-2	1.2E-02	n	1.2E+00	n >S	1.2E+04	n >S	1.5E+03	n >S			3.7E-02	n	3.7E+00	n >S	1.7E+04	n >S	2.2E+03	n >S		
Ethoprop	13194-48-4	2.4E-03	n	2.4E-01	n							7.3E-03	n	7.3E-01	n						
Ethoxy ethanol, 2-	110-80-5	9.8E+00	n	9.8E+02	n >S	4.9E+02	n >S	6.4E+01	n >S			2.9E+01	n >S	2.9E+03	n >S	6.9E+02	n >S	9.0E+01	n >S		
Ethyl acetate	141-78-6	2.2E+01	n	2.2E+03	n	3.3E+05	n >S	4.3E+04	n			6.6E+01	n	6.6E+03	n	4.7E+05	n >S	6.0E+04	n		
Ethyl acrylate	140-88-5	1.9E-02	c	1.9E+00	c	2.2E+03	n	2.8E+02	n			4.3E-02	c	4.3E+00	c	3.1E+03	n	4.0E+02	n		
Ethyl benzene	100-41-4	7.0E-01	m	7.0E+01	m	1.6E+04	n >S	2.0E+03	n >S			7.0E-01	m	7.0E+01	m	2.2E+04	n >S	2.8E+03	n >S		
Ethyl dipropylthiocarbamate, S-	759-94-4	6.1E-01	n	6.1E+01	n							1.8E+00	n	1.8E+02	n						
Ethyl ether	60-29-7	4.9E+00	n	4.9E+02	n	8.4E+04	n >S	1.1E+04	n			1.5E+01	n	1.5E+03	n	1.2E+05	n >S	1.5E+04	n		
Ethyl methacrylate	97-63-2	2.2E+00	n	2.2E+02	n	9.5E+04	n >S	1.2E+04	n			6.6E+00	n	6.6E+02	n	1.3E+05	n >S	1.7E+04	n		
Ethyl methanesulfonate	62-50-0	9.2E-03	c	9.2E-01	c	1.9E+04	c	2.4E+03	c			2.1E-02	c	2.1E+00	c	3.1E+04	c	4.0E+03	c		
Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)	637-92-3	2.4E-02	n	2.4E+00	n	1.1E+04	n >S	1.4E+03	n			7.3E-02	n	7.3E+00	n	1.5E+04	n >S	2.0E+03	n		
Ethyl-1-hexanol, 2-	104-76-7	3.7E+00	n	3.7E+02	n	2.6E+05	n >S	3.3E+04	n >S			1.1E+01	n	1.1E+03	n >S	3.6E+05	n >S	4.7E+04	n >S		
Ethyl-2-hexenal, 2-	645-62-5	3.7E+00	n	3.7E+02	n	1.9E+04	n >S	2.4E+03	n >S			1.1E+01	n	1.1E+03	n >S	2.6E+04	n >S	3.4E+03	n >S		
Ethyl-2-methyl benzene, 1-	611-14-3	4.9E+00	n	4.9E+02	n >S	9.2E+03	n >S	1.2E+03	n >S			1.5E+01	n	1.5E+03	n >S	1.3E+04	n >S	1.7E+03	n >S		
Ethyl-4-methyl benzene, 1-	622-96-8	4.9E+00	n	4.9E+02	n >S	7.0E+03	n >S	9.0E+02	n >S			1.5E+01	n	1.5E+03	n >S	9.7E+03	n >S	1.3E+03	n >S		
Ethylene*	74-85-1																				
Ethylene dibromide (dibromoethane, 1,2-)	106-93-4	5.0E-05	m	5.0E-03	m	5.6E+00	c	7.2E-01	c			5.0E-05	m	5.0E-03	m	9.4E+00	c	1.2E+00	c		
Ethylene glycol	107-21-1	4.9E+01	n	4.9E+03	n	4.1E+05	n	5.3E+04	n			1.5E+02	n	1.5E+04	n	5.8E+05	n	7.5E+04	n		
Ethylene oxide	75-21-8	8.9E-04	c	8.9E-02	c	4.2E+01	c	5.4E+00	c			2.0E-03	c	2.0E-01	c	7.0E+01	c	9.1E+00	c		
Ethylene thiourea	96-45-7	2.0E-03	n	2.0E-01	n	5.4E+04	n >S	7.0E+03	n			5.8E-03	n	5.8E-01	n	7.5E+04	n >S	9.7E+03	n		
Ethylenediamine	107-15-3	2.2E+00	n	2.2E+02	n	4.6E+05	n	5.9E+04	n			6.6E+00	n	6.6E+02	n	6.4E+05	n	8.3E+04	n		
Ethylenimine	151-56-4	1.4E-05	c	1.4E-03	c	1.4E+01	c	1.8E+00	c			3.1E-05	c	3.1E-03	c	2.3E+01	c	3.0E+00	c		
Ethylhexyl acrylate, 2-	103-11-7	1.9E-02	c	1.9E+00	c	1.3E+03	n >S	1.7E+02	n >S			4.3E-02	c	4.3E+00	c	1.9E+03	n >S	2.4E+02	n >S		

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential												Commercial/Industrial											
		$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]			$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]			$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)
Famphur	52-85-7	7.3E-04	n		7.3E-02	n		5.4E+04	n	>S	2.1E+04	n	>S	2.2E-03	n		2.2E-01	n		7.6E+04	n	>S	2.9E+04	n	>S	
Fensulfothion	115-90-2	2.4E-02	n		2.4E+00	n								7.3E-02	n		7.3E+00	n								
Fenthion	55-38-9	1.7E-03	n		1.7E-01	n								5.1E-03	n		5.1E-01	n								
Fluoranthene	206-44-0	9.8E-01	n	>S	9.8E+01	n	>S							2.9E+00	n	>S	2.9E+02	n	>S							
Fluorene	86-73-7	9.8E-01	n		9.8E+01	n	>S							2.9E+00	n	>S	2.9E+02	n	>S							
Fluorine (soluble fluoride)	7782-41-4	4.0E+00	m		4.0E+02	m								4.0E+00	m		4.0E+02	m								2.0E+00
Fluorochloridone	61213-25-0	1.8E-01	n		1.8E+01	n		3.7E+05	n	>S	4.8E+04	n	>S	5.5E-01	n		5.5E+01	n		5.2E+05	n	>S	6.8E+04	n	>S	
Fonofos	944-22-9	4.9E-02	n		4.9E+00	n								1.5E-01	n		1.5E+01	n	>S							
Formaldehyde	50-00-0	4.9E+00	n		4.9E+02	n		8.6E+04	n		1.1E+04	n		1.5E+01	n		1.5E+03	n		1.2E+05	n		1.6E+04	n		
Formic acid	64-18-6	4.9E+01	n		4.9E+03	n		1.7E+04	n		2.3E+03	n		1.5E+02	n		1.5E+04	n		2.4E+04	n		3.2E+03	n		
Furan	110-00-9	2.4E-02	n		2.4E+00	n		4.0E+02	n		5.2E+01	n		7.3E-02	n		7.3E+00	n		5.6E+02	n		7.3E+01	n		
Furfural	98-01-1	7.3E-02	n		7.3E+00	n		4.3E+04	n		5.6E+03	n		2.2E-01	n		2.2E+01	n		6.0E+04	n		7.8E+03	n		
Glycidylaldehyde	765-34-4	9.8E-03	n		9.8E-01	n		1.4E+04	n		1.9E+03	n		2.9E-02	n		2.9E+00	n		2.0E+04	n		2.6E+03	n		
Glyphosate	1071-83-6	7.0E-01	m		7.0E+01	m								7.0E-01	m		7.0E+01	m								
Heptachlor	76-44-8	4.0E-04	m		4.0E-02	m		6.3E+00	c	>S	8.1E-01	c	>S	4.0E-04	m		4.0E-02	m		1.1E+01	c	>S	1.4E+00	c	>S	
Heptachlor epoxide	1024-57-3	2.0E-04	m		2.0E-02	m		1.2E+02	c	>S	1.5E+01	c	>S	2.0E-04	m		2.0E-02	m		2.0E+02	c	>S	2.6E+01	c	>S	
Heptane, n-	142-82-5	1.5E+00	n		1.5E+02	n	>S	1.7E+03	n	>S	2.2E+02	n	>S	4.4E+00	n	>S	4.4E+02	n	>S	2.4E+03	n	>S	3.1E+02	n	>S	
Heptanoic acid, n-	111-14-8	1.2E+01	n		1.2E+03	n		1.7E+04	n	>S	2.1E+03	n	>S	3.7E+01	n		3.7E+03	n	>S	2.3E+04	n	>S	3.0E+03	n	>S	
Hexachlorobenzene	118-74-1	1.0E-03	m		1.0E-01	m	>S	5.7E+00	c	>S	7.4E-01	c	>S	1.0E-03	m		1.0E-01	m	>S	9.6E+00	c	>S	1.2E+00	c	>S	
Hexachlorobutadiene	87-68-3	1.2E-02	c		1.2E+00	c		8.9E+00	c	>S	1.1E+00	c		2.6E-02	c		2.6E+00	c	>S	1.5E+01	c	>S	1.9E+00	c		
Hexachlorocyclohexane, alpha (alpha-BHC)	319-84-6	1.4E-04	c		1.4E-02	c		1.5E+02	c	>S	2.0E+01	c	>S	3.2E-04	c		3.2E-02	c		2.6E+02	c	>S	3.3E+01	c	>S	
Hexachlorocyclohexane, beta (beta-BHC)	319-85-7	5.1E-04	c		5.1E-02	c		1.1E+03	c	>S	1.5E+02	c	>S	1.1E-03	c		1.1E-01	c		1.9E+03	c	>S	2.5E+02	c	>S	
Hexachlorocyclohexane, delta (delta-BHC)	319-86-8	5.1E-04	c		5.1E-02	c		3.6E+02	c	>S	4.7E+01	c	>S	1.1E-03	c		1.1E-01	c		6.1E+02	c	>S	7.9E+01	c	>S	
Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	58-89-9	2.0E-04	m		2.0E-02	m		8.3E+03	n	>S	1.1E+03	n	>S	2.0E-04	m		2.0E-02	m		1.2E+04	n	>S	1.5E+03	n	>S	
Hexachlorocyclohexane, techn (technical-BHC)	608-73-1	5.1E-04	c		5.1E-02	c		9.9E+02	c	>S	1.3E+02	c	>S	1.1E-03	c		1.1E-01	c		1.7E+03	c	>S	2.2E+02	c	>S	
Hexachlorocyclopentadiene	77-47-4	5.0E-02	m		5.0E+00	m	>S	5.4E+00	n	>S	7.0E-01	n		5.0E-02	m		5.0E+00	m	>S	7.6E+00	n	>S	9.8E-01	n		
Hexachloroethane	67-72-1	2.4E-02	n		2.4E+00	n		1.4E+03	c	>S	1.8E+02	c	>S	7.3E-02	n		7.3E+00	n		2.4E+03	c	>S	3.1E+02	c	>S	
Hexachlorophene	70-30-4	7.3E-03	n	>S	7.3E-01	n	>S							2.2E-02	n	>S	2.2E+00	n	>S							
Hexachloropropylene	1888-71-7	2.4E-02	n		2.4E+00	n		4.2E+02	c	>S	5.4E+01	c	>S	7.3E-02	n		7.3E+00	n		7.0E+02	c	>S	9.1E+01	c	>S	
Hexanal, 2-ethyl-	123-05-7	3.7E+00	n		3.7E+02	n		2.2E+04	n	>S	2.9E+03	n	>S	1.1E+01	n		1.1E+03	n	>S	3.1E+04	n	>S	4.0E+03	n	>S	
Hexane, n-	110-54-3	1.5E+00	n		1.5E+02	n	>S	3.8E+01	n	>S	4.9E+00	n		4.4E+00	n		4.4E+02	n	>S	5.3E+01	n	>S	6.9E+00	n		
Hexanediamine, 1,6-	124-09-4	1.2E-01	n		1.2E+01	n		6.9E+04	n		9.0E+03	n		3.7E-01	n		3.7E+01	n		9.7E+04	n		1.3E+04	n		
Hexanediol, 1,6-	629-11-8	1.2E+02	n		1.2E+04	n		1.0E+06	n	>S	1.0E+06	n	>S	3.7E+02	n		3.7E+04	n	>S	1.0E+06	n	>S	1.0E+06	n	>S	
Hexanoic acid	142-62-1	1.6E+00	n		1.6E+02	n		2.1E+04	n	>S	2.7E+03	n		4.7E+00	n		4.7E+02	n		3.0E+04	n	>S	3.8E+03	n		
Hexanone, 2-	591-78-6	1.5E+00	n		1.5E+02	n		1.5E+03	n		2.0E+02	n		4.4E+00	n		4.4E+02	n		2.1E+03	n		2.8E+02	n		
Hexazinone	51235-04-2	8.1E-01	n		8.1E+01	n		2.6E+05	n	>S	8.6E+04	n	>S	2.4E+00	n		2.4E+02	n		3.6E+05	n	>S	1.2E+05	n	>S	
Hexene, 1-	592-41-6	2.4E+00	n		2.4E+02	n	>S	4.0E+01	n	>S	5.1E+00	n		7.3E+00	n		7.3E+02	n	>S	5.6E+01	n	>S	7.2E+00	n	GW Ing	
Hexylene glycol (2-methyl-2,4-pentanediol)	107-41-5	7.3E+00	n		7.3E+02	n		3.9E+03	n		5.1E+02	n		2.2E+01	n		2.2E+03	n		5.5E+03	n		7.1E+02	n		
Hydrazine	302-01-2	3.0E-04	c		3.0E-02	c		5.1E+01	c		6.7E+00	c		6.8E-04	c		6.8E-02	c		8.6E+01	c		1.1E+01	c		
Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)	1191-25-9	1.6E+00	n		1.6E+02	n		2.9E+04	n	>S	4.2E+03	n		4.7E+00	n		4.7E+02	n		4.0E+04	n	>S	5.9E+03	n		

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential											Commercial/Industrial										
		$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]			$^{Air}GW_{Inh-V}$ 0.5 acre source area			$^{Air}GW_{Inh-V}$ 30 acre source area			$^{GW}GW_{Ing}$[2]			$^{GW}GW_{Class\ 3}$[3]			$^{Air}GW_{Inh-V}$ 0.5 acre source area			$^{Air}GW_{Inh-V}$ 30 acre source area			Secondary
Chemical of Concern	CAS	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]		MCL[5] (mg/L)
Hydrogen chloride (hydrochloric acid)*	7647-01-0																								
Hydroquinone	123-31-9	1.6E-02	c		1.6E+00	c								3.7E-02	c		3.7E+00	c							
Indene	95-13-6	4.9E-01	n		4.9E+01	n		2.7E+02	n		3.5E+01	n		1.5E+00	n		1.5E+02	n		3.8E+02	n		5.0E+01	n	
Indeno-1,2,3-cd-pyrene	193-39-5	1.3E-03	c		1.3E-01	c	>S	9.4E+03	c	>S	1.2E+03	c	>S	2.8E-03	c		2.8E-01	c	>S	1.6E+04	c	>S	2.0E+03	c	>S
Iron*	7439-89-6																								
Isoamyl alcohol	123-51-3	1.2E-01	n		1.2E+01	n		6.8E+05	n	>S	8.7E+04	n	>S	3.7E-01	n		3.7E+01	n		9.5E+05	n	>S	1.2E+05	n	>S
Isobutyl alcohol	78-83-1	7.3E+00	n		7.3E+02	n		2.8E+05	n	>S	3.6E+04	n		2.2E+01	n		2.2E+03	n		3.9E+05	n	>S	5.0E+04	n	
Isobutylene (2-methyl-1-propene)	115-11-7							6.1E+04	n	>S	7.9E+03	n	>S							8.5E+04	n	>S	1.1E+04	n	>S
Isobutyric acid (2-methylpropanoic acid)	79-31-2	1.2E+01	n		1.2E+03	n		1.5E+04	n		1.9E+03	n		3.7E+01	n		3.7E+03	n		2.1E+04	n		2.7E+03	n	
Isodecanol	25339-17-7	3.9E-02	n		3.9E+00	n								1.2E-01	n		1.2E+01	n							
Isodrin	465-73-6	5.4E-06	c		5.4E-04	c		3.4E-02	c	>S	4.4E-03	c		1.2E-05	c		1.2E-03	c		5.7E-02	c	>S	7.4E-03	c	
Isophorone	78-59-1	9.6E-01	c		9.6E+01	c		1.0E+05	n	>S	1.3E+04	n	>S	2.2E+00	c		2.2E+02	c		1.4E+05	n	>S	1.9E+04	n	>S
Isopropyl acetate	108-21-4	1.7E+00	n		1.7E+02	n								5.1E+00	n		5.1E+02	n							
Isopropyl alcohol	67-63-0	4.9E+00	n		4.9E+02	n		1.0E+06	n	>S	1.9E+05	n		1.5E+01	n		1.5E+03	n		1.0E+06	n	>S	2.7E+05	n	>S
Isosafrole	120-58-1	4.1E-03	c		4.1E-01	c		4.3E+02	c	>S	5.5E+01	c		9.3E-03	c		9.3E-01	c		7.2E+02	c	>S	9.3E+01	c	
Kelthane (dicofol)	115-32-2	1.5E-01	n		1.5E+01	n	>S							4.4E-01	n		4.4E+01	n	>S						
Kepone (chlordecone)	143-50-0	1.1E-04	c		1.1E-02	c		2.4E+02	c	>S	3.0E+01	c	>S	2.6E-04	c		2.6E-02	c		4.0E+02	c	>S	5.1E+01	c	>S
Lead (inorganic)	7439-92-1	1.5E-02	a	>S	1.5E+00	a	>S							1.5E-02	a	>S	1.5E+00	a	>S						
Limonene, d-*	5989-27-5																								
Lithium	7439-93-2	4.9E-02	n		4.9E+00	n								1.5E-01	n		1.5E+01	n							
Magnesium*	7439-95-4																								
Malathion	121-75-5	4.9E-01	n		4.9E+01	n		2.3E+05	n	>S	3.0E+04	n	>S	1.5E+00	n		1.5E+02	n	>S	3.2E+05	n	>S	4.2E+04	n	>S
Maleic anhydride	108-31-6	2.4E+00	n		2.4E+02	n		1.6E+04	n	>S	2.0E+03	n	>S	7.3E+00	n		7.3E+02	n		2.2E+04	n	>S	2.8E+03	n	>S
Maleic hydrazide	123-33-1	1.2E+01	n		1.2E+03	n		1.0E+06	n	>S	1.0E+06	n	>S	3.7E+01	n		3.7E+03	n		1.0E+06	n	>S	1.0E+06	n	>S
Malononitrile	109-77-3	2.4E-03	n		2.4E-01	n		1.5E+05	n		1.9E+04	n		7.3E-03	n		7.3E-01	n		2.1E+05	n		2.7E+04	n	
Mancozeb	8018-01-7	7.3E-01	n		7.3E+01	n	>S							2.2E+00	n		2.2E+02	n	>S						
Manganese	7439-96-5	1.1E+00	n	>S	1.1E+02	n	>S							1.0E+01	n	>S	1.0E+03	n	>S						5.0E-02
MCPA (4-(chloro-2-methylphenoxy) acetic acid)	94-74-6	1.2E-02	n		1.2E+00	n								3.7E-02	n		3.7E+00	n							
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	5-19-0/ 93-6	2.4E-02	n		2.4E+00	n								7.3E-02	n		7.3E+00	n							
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	93-65-2	2.4E-02	n		2.4E+00	n								7.3E-02	n		7.3E+00	n							
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	7085-19-0	2.4E-02	n		2.4E+00	n								7.3E-02	n		7.3E+00	n							
Mercuric chloride (pH = 4.9)	7487-94-7	2.0E-03	m		2.0E-01	m	>S	7.3E+00	n	>S	9.4E-01	n	>S	2.0E-03	m		2.0E-01	m	>S	1.0E+01	n	>S	1.3E+00	n	>S
Mercuric chloride (pH = 6.8)	7487-94-7	2.0E-03	m		2.0E-01	m	>S	7.3E+00	n	>S	9.4E-01	n	>S	2.0E-03	m		2.0E-01	m	>S	1.0E+01	n	>S	1.3E+00	n	>S
Mercury (pH = 4.9)	7439-97-6	2.0E-03	m		2.0E-01	m	>S	7.3E+00	n	>S	9.4E-01	n	>S	2.0E-03	m		2.0E-01	m	>S	1.0E+01	n	>S	1.3E+00	n	>S
Merphos	150-50-5	7.3E-04	n		7.3E-02	n	>S							2.2E-03	n		2.2E-01	n	>S						
Methacrylic acid (2-methyl-2-propenoic acid)	79-41-4	2.4E-01	n		2.4E+01	n		1.2E+05	n	>S	1.6E+04	n		7.3E-01	n		7.3E+01	n		1.7E+05	n	>S	2.2E+04	n	
Methacrylonitrile	126-98-7	2.4E-03	n		2.4E-01	n		1.0E+03	n		1.3E+02	n		7.3E-03	n		7.3E-01	n		1.4E+03	n		1.8E+02	n	
Methanol	67-56-1	1.2E+01	n		1.2E+03	n		6.1E+05	n		7.9E+04	n		3.7E+01	n		3.7E+03	n		8.6E+05	n		1.1E+05	n	
Methapyrilene	91-80-5	1.9E-04	c		1.9E-02	c		1.2E+04	n	>S	1.5E+03	n		4.3E-04	c		4.3E-02	c		1.6E+04	n	>S	2.1E+03	n	>S

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)
Methomyl	16752-77-5	6.1E-01	n	6.1E+01	n	7.1E+04	n	>S	9.5E+03	n		1.8E+00	n	1.8E+02	n	1.0E+05	n	>S	1.3E+04	n	
Methoxychlor	72-43-5	4.0E-02	m	4.0E+00	m	>S	3.5E+04	n	>S	4.5E+03	n	>S	4.0E-02	m	4.0E+00	m	>S	4.8E+04	n	>S	6.3E+03	n	>S	
Methoxyethanol, 2-	109-86-4						8.1E+01	n	>S	1.1E+01	n							1.1E+02	n	>S	1.5E+01	n		
Methyl acetate (acetic acid, methyl ester)	79-20-9	2.4E+01	n	2.4E+03	n		1.3E+05	n		1.7E+04	n		7.3E+01	n	7.3E+03	n		1.9E+05	n	>S	2.4E+04	n		
Methyl acrylate	96-33-3	4.9E-02	n	4.9E+00	n		9.3E+02	n		1.2E+02	n		1.5E-01	n	1.5E+01	n		1.3E+03	n		1.7E+02	n		
Methyl amyl ketone (2-heptanone)	110-43-0	1.2E+00	n	1.2E+02	n		1.0E+06	n	>S	1.4E+05	n	>S	3.7E+00	n	3.7E+02	n		1.0E+06	n	>S	2.0E+05	n	>S	
Methyl chrysene, 1-	3351-28-8	1.3E-01	c	>S	1.3E+01	c	>S	8.0E+05	c	>S	1.0E+05	c	>S	2.8E-01	c	>S	2.8E+01	c	>S	1.0E+06	c	>S	1.7E+05	c	>S	
Methyl chrysene, 2-	3351-32-4	1.3E-01	c	>S	1.3E+01	c	>S	8.0E+05	c	>S	1.0E+05	c	>S	2.8E-01	c	>S	2.8E+01	c	>S	1.0E+06	c	>S	1.7E+05	c	>S	
Methyl chrysene, 6-	1705-85-7	1.3E-02	c	>S	1.3E+00	c	>S	8.0E+04	c	>S	1.0E+04	c	>S	2.8E-02	c	>S	2.8E+00	c	>S	1.3E+05	c	>S	1.7E+04	c	>S	
Methyl cyclohexane	108-87-2	1.2E+02	n	>S	1.2E+04	n	>S	1.4E+03	n	>S	1.8E+02	n	>S	3.7E+02	n	>S	3.7E+04	n	>S	2.0E+03	n	>S	2.6E+02	n	>S	
Methyl ethyl ketone (2-butanone)	78-93-3	1.5E+01	n	1.5E+03	n	1.0E+06	n	>S	3.5E+05	n	>S	4.4E+01	n	4.4E+03	n	1.0E+06	n	>S	4.9E+05	n	>S		
Methyl iodide (iodomethane)	74-88-4	3.4E-02	n	3.4E+00	n	1.7E+02	n	2.2E+01	n		1.0E-01	n	1.0E+01	n	2.4E+02	n	3.1E+01	n							
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	2.0E+00	n	2.0E+02	n	6.7E+05	n	>S	8.7E+04	n	>S	5.8E+00	n	5.8E+02	n	9.4E+05	n	>S	1.2E+05	n	>S		
Methyl mercury	22967-92-6	2.4E-03	n	2.4E-01	n							7.3E-03	n	7.3E-01	n								
Methyl methacrylate	80-62-6	3.4E+01	n	3.4E+03	n	7.9E+04	n	>S	1.0E+04	n		1.0E+02	n	1.0E+04	n	1.1E+05	n	>S	1.4E+04	n				
Methyl methanesulfonate	66-27-3	9.2E-03	c	9.2E-01	c	1.7E+04	c		2.2E+03	c		2.1E-02	c	2.1E+00	c	2.8E+04	c		3.7E+03	c				
Methyl parathion	298-00-0	6.1E-03	n	6.1E-01	n	4.5E+03	n	>S	5.8E+02	n	>S	1.8E-02	n	1.8E+00	n	6.3E+03	n	>S	8.1E+02	n	>S		
Methyl-1-butene, 2-	563-46-2	1.5E+00	n	1.5E+02	n	>S	7.8E+03	n	>S	1.0E+03	n	>S	4.4E+00	n	4.4E+02	n	>S	1.1E+04	n	>S	1.4E+03	n	>S	
Methyl-1-propanal, 2- (isobutyraldehyde)	78-84-2	9.8E-01	n	9.8E+01	n	4.5E+04	n		5.8E+03	n		2.9E+00	n	2.9E+02	n	6.2E+04	n	>S	8.1E+03	n				
Methyl-2-butene, 2-	513-35-9	1.5E+00	n	1.5E+02	n	1.5E+04	n	>S	1.9E+03	n	>S	4.4E+00	n	4.4E+02	n	>S	2.1E+04	n	>S	2.7E+03	n	>S		
Methyl-2-pentenal, 2-	623-36-9	4.8E-04	c	4.8E-02	c	7.2E+02	n		9.3E+01	n		1.1E-03	c	1.1E-01	c	1.0E+03	n		1.3E+02	n				
Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	99-55-8	2.8E-02	c	2.8E+00	c							6.2E-02	c	6.2E+00	c								
Methylcholanthrene, 3-	56-49-5	4.1E-05	c	4.1E-03	c	>S	4.1E+02	c	>S	5.4E+01	c	>S	9.3E-05	c	9.3E-03	c	>S	7.0E+02	c	>S	9.0E+01	c	>S	
Methylene bromide (dibromomethane)	74-95-3	1.2E-01	c	1.2E+01	c	7.9E+02	n		1.0E+02	n		2.7E-01	c	2.7E+01	c	1.1E+03	n		1.4E+02	n				
Methylene chloride (dichloromethane)	75-09-2	5.0E-03	m	5.0E-01	m	1.3E+03	c		1.6E+02	c		5.0E-03	m	5.0E-01	m	2.1E+03	c		2.8E+02	c				
Methylene-bis (2-chloroaniline) 4,4'-	101-14-4	9.1E-03	c	9.1E-01	c	2.0E+04	c	>S	2.6E+03	c	>S	2.0E-02	c	2.0E+00	c	3.3E+04	c	>S	4.3E+03	c	>S		
Methylmecury hydroxide	1184-57-2	2.4E-03	n	2.4E-01	n	1.5E+02	n		2.0E+01	n		7.3E-03	n	7.3E-01	n	2.0E+02	n		2.9E+01	n				
Methylnaphthalene, 1-	90-12-0	3.1E-02	c	3.1E+00	c							7.0E-02	c	7.0E+00	c								
Methylnaphthalene, 2-	91-57-6	9.8E-02	n	9.8E+00	n							2.9E-01	n	2.9E+01	n	>S							
Methylpyrrolidone, N-	872-50-4	4.9E-01	n	4.9E+01	n	1.0E+06	n		2.3E+05	n		1.5E+00	n	1.5E+02	n	1.0E+06	n		3.3E+05	n				
Methyltetrahydrofuran, 2-	96-47-9	1.2E-01	c	1.2E+01	c	1.8E+03	c		2.3E+02	c		2.7E-01	c	2.7E+01	c	3.1E+03	c		3.9E+02	c				
Methyltetrahydropyran, 2-	10141-72-7	1.2E-01	c	1.2E+01	c	2.1E+03	c		2.7E+02	c		2.7E-01	c	2.7E+01	c	3.6E+03	c		4.6E+02	c				
Metolachlor	51218-45-2	3.7E+00	n	3.7E+02	n							1.1E+01	n	1.1E+03	n	>S							
Metribuzin	21087-64-9	6.1E-01	n	6.1E+01	n							1.8E+00	n	1.8E+02	n								
Mirex	2385-85-5	4.9E-03	n	>S	4.9E-01	n	>S					1.5E-02	n	>S	1.5E+00	n	>S						
Molinate	2212-67-1	4.9E-02	n	4.9E+00	n							1.5E-01	n	1.5E+01	n								
Molybdenum	7439-98-7	1.2E-01	n	>S	1.2E+01	n	>S					3.7E-01	n	>S	3.7E+01	n	>S						
Monocrotophos	2157-98-4	1.5E-02	n	1.5E+00	n	2.2E+05	n		2.1E+05	n		4.4E-02	n	4.4E+00	n	3.1E+05	n		3.0E+05	n				
Morpholine	110-91-8	1.2E+04	n	1.2E+06	n	2.1E+04	n		2.7E+03	n	GW I	3.7E+04	n	3.7E+06	n	2.9E+04	n	GW I	3.7E+03	n	GW Ing			
MTBE (methyl tert-butyl ether)[7]	1634-04-4	2.4E-01	n	2.4E+01	n	4.0E+03	c		5.2E+02	c		7.3E-01	n	7.3E+01	n	6.8E+03	c		8.8E+02	c		1.5E-02		
Naled	300-76-5	4.9E-02	n	4.9E+00	n	>S	2.2E+03	n	>S	2.8E+02	n	>S	1.5E-01	n	1.5E+01	n	>S	3.0E+03	n	>S	3.9E+02	n	>S	

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
Naphthalene	91-20-3	4.9E-01	n	4.9E+01	n >S	3.2E+02	n >S	4.1E+01	n >S			1.5E+00	n	1.5E+02	n >S	4.4E+02	n >S	5.7E+01	n >S			
Naphthoquinone, 1,4-	130-15-4	1.7E-01	n	1.7E+01	n	1.6E+03	n >S	2.1E+02	n			5.1E-01	n	5.1E+01	n	2.3E+03	n >S	2.9E+02	n >S			
Naphthylamine, 1-	134-32-7	4.9E-01	n	4.9E+01	n							1.5E+00	n	1.5E+02	n							
Naphthylamine, 2-	91-59-8	5.1E-04	c	5.1E-02	c							1.1E-03	c	1.1E-01	c							
Napropamide	15299-99-7	2.4E+00	n	2.4E+02	n >S							7.3E+00	n	7.3E+02	n >S							
Neopentyl glycol	126-30-7	7.3E+00	n	7.3E+02	n							2.2E+01	n	2.2E+03	n							
Nickel and compounds	7440-02-0	4.9E-01	n >S	4.9E+01	n >S							1.5E+00	n >S	1.5E+02	n >S							
Nitrate	14797-55-8	1.0E+01	m	1.0E+03	m							1.0E+01	m	1.0E+03	m							
Nitrite	14797-65-0	1.0E+00	m	1.0E+02	m							1.0E+00	m	1.0E+02	m							
Nitroaniline, 2-	88-74-4	7.3E-03	n	7.3E-01	n	4.0E+03	n >S	5.2E+02	n			2.2E-02	n	2.2E+00	n	5.6E+03	n >S	7.2E+02	n			
Nitroaniline, 3-	99-09-2	7.3E-03	n	7.3E-01	n	7.1E+04	n >S	9.2E+03	n >S			2.2E-02	n	2.2E+00	n	1.0E+05	n >S	1.3E+04	n >S			
Nitroaniline, 4-	100-01-6	4.6E-02	c	4.6E+00	c	1.4E+05	n >S	1.9E+04	n >S			1.0E-01	c	1.0E+01	c	2.0E+05	n >S	2.6E+04	n >S			
Nitrobenzene	98-95-3	4.9E-02	n	4.9E+00	n	7.2E+02	c	9.3E+01	c			1.5E-01	n	1.5E+01	n	1.2E+03	c	1.6E+02	c			
Nitroglycerin	55-63-0	2.4E-03	n	2.4E-01	n							7.3E-03	n	7.3E-01	n							
Nitrophenol, 2-	88-75-5	4.9E-02	n	4.9E+00	n	6.7E+04	n >S	8.7E+03	n			1.5E-01	n	1.5E+01	n	9.4E+04	n >S	1.2E+04	n			
Nitrophenol, 3-	554-84-7	4.9E-02	n	4.9E+00	n	3.1E+05	n >S	2.3E+05	n >S			1.5E-01	n	1.5E+01	n	4.4E+05	n >S	3.2E+05	n >S			
Nitrophenol, 4-	100-02-7	4.9E-02	n	4.9E+00	n	2.4E+04	n >S	3.1E+03	n			1.5E-01	n	1.5E+01	n	3.3E+04	n >S	4.3E+03	n			
Nitropropane, 2-	79-46-9	3.4E-03	n	3.4E-01	n	1.7E+00	c	2.2E-01	c			1.0E-02	n	1.0E+00	n	2.9E+00	c	3.8E-01	c			
Nitroquinoline-N-oxide, 4-	56-57-5	9.7E-05	c	9.7E-03	c	1.1E+04	c	1.1E+04	c			2.2E-04	c	2.2E-02	c	1.9E+04	c	1.8E+04	c			
Nitrosodiethanolamine	1116-54-7	3.3E-04	c	3.3E-02	c							7.3E-04	c	7.3E-02	c							
Nitrosodiethylamine, n-	55-18-5	6.1E-06	c	6.1E-04	c	7.4E+00	c	9.5E-01	c			1.4E-05	c	1.4E-03	c	1.2E+01	c	1.6E+00	c			
Nitrosodimethylamine, n-	62-75-9	1.8E-05	c	1.8E-03	c	2.0E+01	c	2.6E+00	c			4.0E-05	c	4.0E-03	c	3.4E+01	c	4.4E+00	c			
Nitrosodi-n-butylamine, n-	924-16-3	1.7E-04	c	1.7E-02	c	4.7E+00	c	6.1E-01	c			3.8E-04	c	3.8E-02	c	7.9E+00	c	1.0E+00	c			
Nitrosodi-n-propylamine, n-	621-64-7	1.3E-04	c	1.3E-02	c							2.9E-04	c	2.9E-02	c							
Nitrosodiphenylamine	86-30-6	1.9E-01	c	1.9E+01	c							4.2E-01	c	4.2E+01	c >S							
Nitroso-methyl-ethyl-amine, n-	10595-95-6	4.1E-05	c	4.1E-03	c							9.3E-05	c	9.3E-03	c							
Nitrosomorpholine, N-	59-89-2	1.4E-04	c	1.4E-02	c	2.7E+02	c	3.6E+01	c			3.1E-04	c	3.1E-02	c	4.6E+02	c	6.0E+01	c			
Nitroso-n-ethylurea, n-	759-73-9	6.5E-06	c	6.5E-04	c							1.5E-05	c	1.5E-03	c							
Nitrosopiperidine, N-	100-75-4	4.0E-03	c mql	9.7E-03	c	1.6E+02	c	2.1E+01	c			2.2E-04	c	2.2E-02	c	2.8E+02	c	3.6E+01	c			
Nitrosopyrrolidine, n-	930-55-2	4.3E-04	c	4.3E-02	c	9.6E+02	c	1.2E+02	c			9.7E-04	c	9.7E-02	c	1.6E+03	c	2.1E+02	c			
Nitrotoluene, m-	99-08-1	2.4E-01	n	2.4E+01	n	6.6E+03	n >S	8.5E+02	n >S			7.3E-01	n	7.3E+01	n	9.2E+03	n >S	1.2E+03	n >S			
Nitrotoluene, o-	88-72-2	4.1E-03	c	4.1E-01	c	7.7E+03	n >S	1.0E+03	n >S			9.3E-03	c	9.3E-01	c	1.1E+04	n >S	1.4E+03	n >S			
Nitrotoluene, p-	99-99-0	5.7E-02	c	5.7E+00	c	6.5E+03	n >S	8.4E+02	n >S			1.3E-01	c	1.3E+01	c	9.1E+03	n >S	1.2E+03	n >S			
Nonachlor, cis-	5103-73-1	2.6E-03	c	2.6E-01	c >S	7.7E+02	c >S	9.9E+01	c >S			5.8E-03	c	5.8E-01	c >S	1.3E+03	c >S	1.7E+02	c >S			
Nonachlor, trans-	39765-80-5	2.6E-03	c	2.6E-01	c >S	7.7E+02	c >S	9.9E+01	c >S			5.8E-03	c	5.8E-01	c >S	1.3E+03	c >S	1.7E+02	c >S			
Nonanal	124-19-6	4.9E+00	n	4.9E+02	n >S							1.5E+01	n	1.5E+03	n >S							
Nonene, 1-n	124-11-8	2.4E+00	n >S	2.4E+02	n >S	1.1E+00	n >S	1.4E-01	n GW I			7.3E+00	n >S	7.3E+02	n >S	1.5E+00	n >S	2.0E-01	n GW Ing			
Nonylphenol	104-40-5	2.4E+00	n >S	2.4E+02	n >S	6.8E+05	n >S	8.8E+04	n >S			7.3E+00	n >S	7.3E+02	n >S	9.5E+05	n >S	1.2E+05	n >S			
Nonylphenol	25154-52-3	2.4E+00	n >S	2.4E+02	n >S	6.8E+05	n >S	8.8E+04	n >S			7.3E+00	n >S	7.3E+02	n >S	9.5E+05	n >S	1.2E+05	n >S			
Nonylphenol	84852-15-3	2.4E+00	n >S	2.4E+02	n >S	6.8E+05	n >S	8.8E+04	n >S			7.3E+00	n >S	7.3E+02	n >S	9.5E+05	n >S	1.2E+05	n >S			
Nonylphenol ethoxylate	9016-45-9	2.4E+00	n >S	2.4E+02	n >S	1.8E+05	n >S	2.3E+04	n >S			7.3E+00	n >S	7.3E+02	n >S	2.5E+05	n >S	3.2E+04	n >S			
Octamethylpyrophosphoramide	152-16-9	4.9E-02	n	4.9E+00	n							1.5E-01	n	1.5E+01	n							

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area			$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		(mg/L)	note[4]		(mg/L)
Octanone	106-68-3	1.5E+00	n	1.5E+02	n	1.0E+06	n	>S	6.2E+05	n	>S	4.4E+00	n	4.4E+02	n	1.0E+06	n	>S	8.7E+05	n	>S	
Oxamyl	23135-22-0	2.0E-01	m	2.0E+01	m							2.0E-01	m	2.0E+01	m							
Oxychlordane	27304-13-8	2.6E-03	c	2.6E-01	c	7.7E+02	c	>S	9.9E+01	c	>S	5.8E-03	c	5.8E-01	c	1.3E+03	c	>S	1.7E+02	c	>S	
Paraquat	1910-42-5	1.1E-01	n	1.1E+01	n							3.3E-01	n	3.3E+01	n							
Parathion (ethyl parathion)	56-38-2	1.5E-01	n	1.5E+01	n	1.5E+03	n	>S	1.9E+02	n	>S	4.4E-01	n	4.4E+01	n	2.1E+03	n	>S	2.7E+02	n	>S	
Pebulate	1114-71-2	1.2E+00	n	1.2E+02	n			>S				3.7E+00	n	3.7E+02	n			>S				
Pendimethalin	40487-42-1	9.8E-01	n	>S 9.8E+01	n			>S				2.9E+00	n	>S 2.9E+02	n			>S				
Pentachlorobenzene	608-93-5	2.0E-02	n	2.0E+00	n	7.7E+03	n	>S	1.0E+03	n	>S	5.8E-02	n	5.8E+00	n	1.1E+04	n	>S	1.4E+03	n	>S	
Pentachloroethane	76-01-7	1.0E-02	c	1.0E+00	c	3.0E+02	c		3.8E+01	c		2.3E-02	c	2.3E+00	c	5.0E+02	c		6.4E+01	c		
Pentachloronitrobenzene	82-68-8	3.5E-03	c	3.5E-01	c	1.2E+02	n	>S	1.6E+01	n	>S	7.9E-03	c	7.9E-01	c	1.7E+02	n	>S	2.2E+01	n	>S	
Pentachlorophenol	87-86-5	1.0E-03	m	1.0E-01	m	1.3E+04	n	>S	1.7E+03	n	>S	1.0E-03	m	1.0E-01	m	1.9E+04	n	>S	2.4E+03	n	>S	
Pentadiene, 1,3-trans-	2004-70-8	1.5E+00	n	1.5E+02	n	7.6E+04	n	>S	9.8E+03	n	>S	4.4E+00	n	4.4E+02	n	1.1E+05	n	>S	1.4E+04	n	>S	
Pentaerythritol tetranitrate (PETN)	78-11-5	9.8E+00	n	9.8E+02	n	>S						2.9E+01	n	>S 2.9E+03	n	>S						
Pentane	109-66-0	1.7E+01	n	1.7E+03	n	>S 5.0E+00	n	GW I	6.4E-01	n	GW I	5.1E+01	n	>S 5.1E+03	n	>S 7.0E+00	n	GW I	9.0E-01	n	GW Ing	
Pentane, 2-methyl-	107-83-5	1.5E+00	n	1.5E+02	n	>S 1.7E+03	n	>S	2.3E+02	n	>S	4.4E+00	n	4.4E+02	n	>S 2.4E+03	n	>S	3.2E+02	n	>S	
Pentane, 3-methyl-	96-14-0	1.5E+00	n	1.5E+02	n	>S 2.2E+03	n	>S	2.9E+02	n	>S	4.4E+00	n	4.4E+02	n	>S 3.1E+03	n	>S	4.0E+02	n	>S	
Pentanediol, 1,5-	111-29-5	1.2E+02	n	1.2E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	3.7E+02	n	3.7E+04	n	1.0E+06	n	>S	1.0E+06	n	>S	
Pentanol, 1-	71-41-0	8.1E-01	n	8.1E+01	n	1.0E+06	n	>S	2.1E+05	n	>S	2.4E+00	n	2.4E+02	n	1.0E+06	n	>S	2.9E+05	n	>S	
Pentanol, 4-methyl-2-	108-11-2	6.4E-01	n	6.4E+01	n	1.3E+05	n	>S	1.7E+04	n	>S	1.9E+00	n	1.9E+02	n	1.8E+05	n	>S	2.4E+04	n	>S	
Pentanone, 2-	107-87-9	9.8E-01	n	9.8E+01	n	2.2E+05	n	>S	2.9E+04	n		2.9E+00	n	2.9E+02	n	3.1E+05	n	>S	4.0E+04	n		
Pentyne, 1-	627-19-0	1.5E+00	n	1.5E+02	n	7.2E+04	n	>S	9.3E+03	n	>S	4.4E+00	n	4.4E+02	n	1.0E+05	n	>S	1.3E+04	n	>S	
Perchlorate	14797-73-0	1.7E-02	n	1.7E+00	n							5.1E-02	n	5.1E+00	n							
Perylene	198-55-0	4.9E-01	n	>S 4.9E+01	n	>S						1.5E+00	n	>S 1.5E+02	n	>S						
Phenacetin	62-44-2	4.1E-01	c	4.1E+01	c	1.0E+06	c	>S	1.5E+05	c	>S	9.3E-01	c	9.3E+01	c	1.0E+06	c	>S	2.5E+05	c	>S	
Phenanthrene	85-01-8	7.3E-01	n	7.3E+01	n	>S						2.2E+00	n	>S 2.2E+02	n	>S						
Phenanthridine	229-87-8	7.3E-02	n	7.3E+00	n							2.2E-01	n	2.2E+01	n							
Phenol	108-95-2	7.3E+00	n	7.3E+02	n	2.8E+05	n	>S	3.6E+04	n		2.2E+01	n	2.2E+03	n	3.9E+05	n	>S	5.0E+04	n		
Phenol, 4-tert-butyl-	98-54-4	1.2E-01	n	1.2E+01	n	1.3E+05	n	>S	1.7E+04	n	>S	3.7E-01	n	3.7E+01	n	1.8E+05	n	>S	2.3E+04	n	>S	
Phenothiazine	92-84-2	2.7E-02	n	>S 2.7E+00	n	>S 1.6E+05	n	>S	2.0E+04	n	>S	8.0E-02	n	>S 8.0E+00	n	>S 2.2E+05	n	>S	2.8E+04	n	>S	
Phenyl mercuric acetate	62-38-4	2.0E-03	n	2.0E-01	n							5.8E-03	n	5.8E-01	n							
Phenylene diamine, m-	108-45-2	1.5E-01	n	1.5E+01	n	2.0E+03	n		2.6E+02	n		4.4E-01	n	4.4E+01	n	2.8E+03	n		3.7E+02	n		
Phenylene diamine, p-	106-50-3	4.6E+00	n	4.6E+02	n	2.3E+03	n		3.0E+02	n		1.4E+01	n	1.4E+03	n	3.2E+03	n		4.2E+02	n		
Phorate	298-02-2	4.9E-03	n	4.9E-01	n	9.8E+01	n	>S	1.3E+01	n		1.5E-02	n	1.5E+00	n	1.4E+02	n	>S	1.8E+01	n		
Phosalone	2310-17-0	4.9E-02	n	4.9E+00	n							1.5E-01	n	1.5E+01	n							
Phosdrin (mevinphos)	7786-34-7	6.1E-04	n	6.1E-02	n							1.8E-03	n	1.8E-01	n							
Phosmet	732-11-6	4.9E-01	n	4.9E+01	n	7.6E+04	n	>S	9.9E+03	n	>S	1.5E+00	n	1.5E+02	n	1.1E+05	n	>S	1.4E+04	n	>S	
Phosphine	7803-51-2	7.3E-03	n	7.3E-01	n	2.9E-03	n	GW I	3.7E-04	n	GW I	2.2E-02	n	2.2E+00	n	4.0E-03	n	GW I	5.2E-04	n	GW Ing	
Phosphorotrithioic acid, S,S,S-tributyl ester	78-48-8	1.1E-02	c	>S 1.1E+00	c	>S						2.4E-02	c	>S 2.4E+00	c	>S						
Phosphorus, total*	7723-14-0																					
Phosphorus, white	7723-14-0	4.9E-04	n	4.9E-02	n							1.5E-03	n	1.5E-01	n							
Phthalic anhydride	85-44-9	4.9E+01	n	4.9E+03	n	1.0E+06	n	>S	4.0E+05	n	>S	1.5E+02	n	1.5E+04	n	>S 1.0E+06	n	>S	5.6E+05	n	>S	
Picloram	1918-02-1	5.0E-01	m	5.0E+01	m							5.0E-01	m	5.0E+01	m							

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]		MCL[5] (mg/L)
Picoline, 2- (2-methylpyridine)	109-06-8	2.2E-01	n	2.2E+01	n	4.9E+02	n	6.3E+01	n			6.6E-01	n	6.6E+01	n	6.8E+02	n	8.8E+01	n		
Polybrominated biphenyls (PBBs)	67774-32-7	1.0E-04	c	1.0E-02	c							2.3E-04	c	2.3E-02	c >S						
Polychlorinated biphenyls (PCBs)	1336-36-3	5.0E-04	m	5.0E-02	m	2.9E+00	c >S	3.8E-01	c >S			5.0E-04	m	5.0E-02	m	4.9E+00	c >S	6.4E-01	c >S		
Potassium*	7440--09-27																				
Primene	68955-53-3	1.5E-01	n	1.5E+01	n	8.5E+02	n >S	1.1E+02	n >S			4.4E-01	n	4.4E+01	n	1.2E+03	n >S	1.5E+02	n >S		
Prometon (pramitol)	1610-18-0	3.7E-01	n	3.7E+01	n							1.1E+00	n	1.1E+02	n >S						
Pronamide	23950-58-5	1.8E+00	n	1.8E+02	n >S							5.5E+00	n	5.5E+02	n >S						
Propanal (propionaldehyde)	123-38-6	2.0E-01	n	2.0E+01	n	1.6E+03	n	2.1E+02	n			5.8E-01	n	5.8E+01	n	2.3E+03	n	3.0E+02	n		
Propane, 1-bromo-	106-94-5	8.8E-01	n	8.8E+01	n	1.1E+03	n	1.5E+02	n			2.6E+00	n	2.6E+02	n	1.6E+03	n	2.1E+02	n		
Propanil	709-98-8	1.2E-01	n	1.2E+01	n							3.7E-01	n	3.7E+01	n						
Propanoic acid (propionic acid)	79-09-4	1.2E+01	n	1.2E+03	n	1.5E+04	n	1.9E+03	n			3.7E+01	n	3.7E+03	n	2.1E+04	n	2.7E+03	n		
Propanol, 1-	71-23-8	4.9E+00	n	4.9E+02	n	8.5E+05	n >S	1.1E+05	n			1.5E+01	n	1.5E+03	n	1.0E+06	n >S	1.5E+05	n >S		
Propargite	2312-35-8	4.9E-01	n	4.9E+01	n >S							1.5E+00	n >S	1.5E+02	n >S						
Propargyl alcohol	107-19-7	4.9E-02	n	4.9E+00	n	3.0E+04	n	3.8E+03	n			1.5E-01	n	1.5E+01	n	4.2E+04	n	5.4E+03	n		
Propazine	139-40-2	2.1E-02	c	2.1E+00	c							4.6E-02	c	4.6E+00	c						
Propham	122-42-9	4.9E-01	n	4.9E+01	n							1.5E+00	n	1.5E+02	n						
Propionitrile (propane nitrile)	107-12-0	9.8E-03	n	9.8E-01	n	7.7E+03	n	9.9E+02	n			2.9E-02	n	2.9E+00	n	1.1E+04	n	1.4E+03	n		
Propyl acetate, n-	109-60-4	2.2E+00	n	2.2E+02	n							6.6E+00	n	6.6E+02	n						
Propylbenzene, n-	103-65-1	9.8E-01	n	9.8E+01	n >S	6.0E+03	n >S	7.8E+02	n >S			2.9E+00	n	2.9E+02	n >S	8.5E+03	n >S	1.1E+03	n >S		
Propylene glycol	57-55-6	4.9E+02	n	4.9E+04	n	1.0E+06	n >S	3.4E+05	n >S			1.5E+03	n	1.5E+05	n >S	1.0E+06	n >S	4.8E+05	n >S		
Propylene glycol monomethyl ether	107-98-2	1.7E+01	n	1.7E+03	n	1.0E+06	n >S	1.0E+06	n >S			5.1E+01	n	5.1E+03	n	1.0E+06	n >S	1.0E+06	n >S		
Propylene oxide	75-56-9	3.8E-03	c	3.8E-01	c	1.6E+03	c	2.0E+02	c			8.5E-03	c	8.5E-01	c	2.7E+03	c	3.4E+02	c		
Propylene tetramer	6842-15-5	2.4E+00	n >S	2.4E+02	n >S	4.4E+01	n >S	5.7E+00	n >S			7.3E+00	n >S	7.3E+02	n >S	6.2E+01	n >S	8.0E+00	n >S		
Prothiofos (Tokuthion)	34643-46-4	2.4E-03	n	2.4E-01	n >S	1.4E+03	n >S	1.8E+02	n >S			7.3E-03	n >S	7.3E-01	n >S	2.0E+03	n >S	2.5E+02	n >S		
Pyrene	129-00-0	7.3E-01	n >S	7.3E+01	n >S							2.2E+00	n >S	2.2E+02	n >S						
Pyridine	110-86-1	2.4E-02	n	2.4E+00	n	2.2E+02	n	2.9E+01	n			7.3E-02	n	7.3E+00	n	3.1E+02	n >S	4.0E+01	n		
Quinoline	91-22-5	3.0E-04	c	3.0E-02	c	4.3E+03	n	5.6E+02	n			6.8E-04	c	6.8E-02	c	6.0E+03	n	7.8E+02	n		
Ronnel	299-84-3	1.2E+00	n	1.2E+02	n >S							3.7E+00	n >S	3.7E+02	n >S						
Safrole	94-59-7	4.1E-03	c	4.1E-01	c	1.9E+02	c >S	2.4E+01	c			9.3E-03	c	9.3E-01	c	3.2E+02	c >S	4.1E+01	c		
Selenium	7782-49-2	5.0E-02	m >S	5.0E+00	m >S							5.0E-02	m >S	5.0E+00	m >S						
Selenourea	630-10-4	1.2E-01	n	1.2E+01	n							3.7E-01	n	3.7E+01	n						
Silver	7440-22-4	1.2E-01	n >S	1.2E+01	n >S							3.7E-01	n >S	3.7E+01	n >S						1.0E-01
Simazine	122-34-9	4.0E-03	m	4.0E-01	m							4.0E-03	m	4.0E-01	m						
Sodium*	7440-23-5																				
Sodium diethyldithiocarbamate	148-18-5	3.4E-03	c	3.4E-01	c							7.6E-03	c	7.6E-01	c						
Sodium hypochlorite	7681-52-9	5.1E+00	n	5.1E+02	n							1.5E+01	n	1.5E+03	n						
Sodium polyacrylate	9003-04-7	1.2E+01	n	1.2E+03	n	1.5E+04	n	2.0E+03	n			3.7E+01	n	3.7E+03	n	2.1E+04	n	2.7E+03	n		
Strontium	7440-24-6	1.5E+01	n	1.5E+03	n							4.4E+01	n	4.4E+03	n						
Strychnine	57-24-9	7.3E-03	n	7.3E-01	n							2.2E-02	n	2.2E+00	n						
Styrene	100-42-5	1.0E-01	m	1.0E+01	m	1.5E+04	n >S	2.0E+03	n >S			1.0E-01	m	1.0E+01	m	2.1E+04	n >S	2.7E+03	n >S		
Sulfate*	14808-79-8																				
Sulfide*	18496-25-8																				

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial									
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
Sulfolane	126-33-0	4.9E-04	n	4.9E-02	n							1.5E-03	n	1.5E-01	n						
Sulfur*	7704-34-9																				
Sulprofos (Bolstar)	35400-43-2	7.3E-02	n	>S	7.3E+00	n	>S	2.7E+04	n	>S	3.4E+03	n	>S	2.2E-01	n	>S	2.2E+01	n	>S	3.7E+04	n	>S	4.8E+03	n	>S	
TCDD, 2,3,7,8- (dioxin)	1746-01-6	3.0E-08	m		3.0E-06	m						3.0E-08	m		3.0E-06	m							
Tebuconazole	107534-96-3	7.3E-01	n		7.3E+01	n	>S					2.2E+00	n		2.2E+02	n	>S						
Tebuthiuron	34014-18-1	1.7E+00	n		1.7E+02	n						5.1E+00	n		5.1E+02	n							
Terbufos	13071-79-9	6.1E-04	n		6.1E-02	n						1.8E-03	n		1.8E-01	n							
Tert-amyl ethyl ether (TAEE)	919-94-8	9.8E-01	n		9.8E+01	n		1.5E+03	n	>S	1.9E+02	n		2.9E+00	n		2.9E+02	n		2.1E+03	n	>S	2.7E+02	n		
Tert-amyl-methyl ether (TAME)	994-05-8	9.8E-01	n		9.8E+01	n		2.5E+03	n		3.2E+02	n		2.9E+00	n		2.9E+02	n		3.5E+03	n		4.5E+02	n		
Tert-butyl alcohol (2-methyl-2-propanol)	75-65-0	2.2E+00	n		2.2E+02	n		5.1E+05	n	>S	6.6E+04	n		6.6E+00	n		6.6E+02	n		7.1E+05	n	>S	9.2E+04	n		
Tetrachlorobenzene, 1,2,3,4-	634-66-2	7.3E-03	n		7.3E-01	n		2.9E+04	n	>S	3.7E+03	n	>S	2.2E-02	n		2.2E+00	n		4.1E+04	n	>S	5.2E+03	n	>S	
Tetrachlorobenzene, 1,2,3,5-	634-90-2	7.3E-03	n		7.3E-01	n		3.3E+04	n	>S	4.3E+03	n	>S	2.2E-02	n		2.2E+00	n		4.7E+04	n	>S	6.1E+03	n	>S	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	7.3E-03	n		7.3E-01	n	>S	3.8E+04	n	>S	5.0E+03	n	>S	2.2E-02	n		2.2E+00	n	>S	5.4E+04	n	>S	6.9E+03	n	>S	
Tetrachloroethane, 1,1,1,2-	630-20-6	3.5E-02	c		3.5E+00	c		1.1E+02	c		1.4E+01	c		7.9E-02	c		7.9E+00	c		1.9E+02	c		2.4E+01	c		
Tetrachloroethane, 1,1,2,2-	79-34-5	4.6E-03	c		4.6E-01	c		4.4E+01	c		5.7E+00	c		1.0E-02	c		1.0E+00	c		7.4E+01	c		9.6E+00	c		
Tetrachloroethylene	127-18-4	5.0E-03	m		5.0E-01	m		5.0E+02	c	>S	6.4E+01	c		5.0E-03	m		5.0E-01	m		8.4E+02	c	>S	1.1E+02	c		
Tetrachlorophenol, 2,3,4,5-	4901-51-3	7.3E-01	n		7.3E+01	n		1.9E+05	n	>S	2.4E+04	n	>S	2.2E+00	n		2.2E+02	n		2.6E+05	n	>S	3.4E+04	n	>S	
Tetrachlorophenol, 2,3,4,6-	58-90-2	7.3E-01	n		7.3E+01	n		6.9E+04	n	>S	9.0E+03	n	>S	2.2E+00	n		2.2E+02	n	>S	9.7E+04	n	>S	1.3E+04	n	>S	
Tetrachlorophenol, 2,3,5,6-	935-95-5	7.3E-01	n		7.3E+01	n	>S	2.0E+03	n	>S	2.6E+02	n	>S	2.2E+00	n	>S	2.2E+02	n	>S	2.8E+03	n	>S	3.7E+02	n	>S	
Tetrachlorvinphos (Stirophos)	22248-79-9	1.0E+00	n		1.0E+02	n	>S	4.2E+05	n	>S	5.5E+04	n	>S	3.1E+00	n		3.1E+02	n	>S	5.9E+05	n	>S	7.7E+04	n	>S	
Tetradifon	116-29-0	4.9E-01	n		4.9E+01	n	>S							1.5E+00	n	>S	1.5E+02	n	>S							
Tetraethyl dithiopyrophosphate (sulfotep)	3689-24-5	1.2E-02	n		1.2E+00	n		3.4E+03	n	>S	4.4E+02	n	>S	3.7E-02	n		3.7E+00	n		4.8E+03	n	>S	6.2E+02	n	>S	
Tetraethyl lead	78-00-2	2.4E-06	n		2.4E-04	n		7.7E-01	n		9.9E-02	n		7.3E-06	n		7.3E-04	n		1.1E+00	n	>S	1.4E-01	n		
Tetraethyl pyrophosphate (TEPP)	107-49-3	2.7E-04	n		2.7E-02	n		2.2E+03	n		2.8E+02	n		8.0E-04	n		8.0E-02	n		3.0E+03	n		3.9E+02	n		
Tetraethylene glycol	112-60-7	8.1E+00	n		8.1E+02	n		1.0E+06	n	>S	1.0E+06	n	>S	2.4E+01	n		2.4E+03	n		1.0E+06	n	>S	1.0E+06	n	>S	
Tetrahydrofuran	109-99-9	1.2E-01	c		1.2E+01	c		2.2E+03	c		2.9E+02	c		2.7E-01	c		2.7E+01	c		3.7E+03	c		4.8E+02	c		
Tetrahydropyran	142-68-7	1.2E-01	c		1.2E+01	c		2.6E+03	c		3.4E+02	c		2.7E-01	c		2.7E+01	c		4.4E+03	c		5.7E+02	c		
Tetraoxadodecane, 2,5,8,11-	112-49-2	6.1E-01	n		6.1E+01	n		1.0E+06	n	>S	1.4E+05	n		1.8E+00	n		1.8E+02	n		1.0E+06	n	>S	2.0E+05	n		
Thallium and compounds (as thallium chloride)	7791-12-0	2.0E-03	m		2.0E-01	m								2.0E-03	m		2.0E-01	m								
Thiofanox	39196-18-4	7.3E-03	n		7.3E-01	n		2.5E+04	n	>S	3.2E+03	n		2.2E-02	n		2.2E+00	n		3.4E+04	n	>S	4.5E+03	n		
Thionazin	297-97-2	1.7E-03	n		1.7E-01	n								5.1E-03	n		5.1E-01	n								
Thiophanate-methyl	23564-05-8	2.0E+00	n		2.0E+02	n	>S							5.8E+00	n	>S	5.8E+02	n	>S							
Thiram	137-26-8	1.2E-01	n		1.2E+01	n		3.2E+04	n	>S	4.1E+03	n	>S	3.7E-01	n		3.7E+01	n	>S	4.5E+04	n	>S	5.8E+03	n	>S	
Tin	7440-31-5	1.5E+01	n	>S	1.5E+03	n	>S							4.4E+01	n	>S	4.4E+03	n	>S							
Titanium	7440-32-6	1.2E+04	n	>S	1.2E+06	n	>S							3.7E+04	n	>S	3.7E+06	n	>S							
Toluene	108-88-3	1.0E+00	m		1.0E+02	m		6.4E+04	n	>S	8.2E+03	n	>S	1.0E+00	m		1.0E+02	m		8.9E+04	n	>S	1.2E+04	n	>S	
Toluene diisocyanate, 2,4/2,6-	26471-62-5							1.8E+03	n		2.4E+02	n								2.6E+03	n		3.3E+02	n		
Toluenediamine, 2,4-	95-80-7	2.9E-04	c		2.9E-02	c		1.3E+05	n	>S	1.7E+04	n	>S	6.4E-04	c		6.4E-02	c		1.8E+05	n	>S	2.3E+04	n	>S	
Toluenediamine, 2,6-	823-40-5	7.3E-01	n		7.3E+01	n								2.2E+00	n		2.2E+02	n								
Toluidine, o-	95-53-4	3.8E-03	c		3.8E-01	c		2.6E+03	c		3.4E+02	c		8.5E-03	c		8.5E-01	c		4.4E+03	c		5.7E+02	c		
Toluidine, p-	106-49-0	4.8E-03	c		4.8E-01	c								1.1E-02	c		1.1E+00	c								
Toxaphene	8001-35-2	3.0E-03	m		3.0E-01	m		1.8E+03	c	>S	2.3E+02	c	>S	3.0E-03	m		3.0E-01	m		3.0E+03	c	>S	3.9E+02	c	>S	

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential										Commercial/Industrial										
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area				$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh\text{-}V}$ 0.5 acre source area		$^{Air}GW_{Inh\text{-}V}$ 30 acre source area			Secondary MCL[5]
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]			(mg/L)
TPH, TX1005, C6-C12	TPH-1005-1	9.8E-01	n	9.8E+01	n >S	1.8E+03	n >S	2.3E+02	n >S			2.9E+00	n	2.9E+02	n >S	2.5E+03	n >S	3.2E+02	n >S			
TPH, TX1005, >C12-C28	TPH-1005-2	9.8E-01	n	9.8E+01	n >S	7.5E+03	n >S	9.7E+02	n >S			2.9E+00	n	2.9E+02	n >S	1.0E+04	n >S	1.4E+03	n >S			
TPH, TX1005, >C12-C35	TPH-1005-3	9.8E-01	n	9.8E+01	n >S	7.5E+03	n >S	9.7E+02	n >S			2.9E+00	n	2.9E+02	n >S	1.0E+04	n >S	1.4E+03	n >S			
TPH, TX1005, >C28-C35	TPH-1005-4	9.8E-01	n	9.8E+01	n >S	7.5E+03	n >S	9.7E+02	n >S			2.9E+00	n	2.9E+02	n >S	1.0E+04	n >S	1.4E+03	n >S			
TP Silvex, 2,4,5-	93-72-1	5.0E-02	m	5.0E+00	m	3.5E+05	n >S	4.5E+04	n >S			5.0E-02	m	5.0E+00	m	4.9E+05	n >S	6.4E+04	n >S			
Triademenol	55219-65-3	7.3E-01	n	7.3E+01	n							2.2E+00	n	2.2E+02	n >S							
Triallate	2303-17-5	3.2E-01	n	3.2E+01	n >S							9.5E-01	n	9.5E+01	n >S							
Triaminotrinitrobenzene (TATB)	3058-38-6	3.0E-02	c	3.0E+00	c	4.2E+05	n >S	3.7E+05	n >S			6.8E-02	c	6.8E+00	c	5.9E+05	n >S	5.1E+05	n >S			
Tributyltin oxide	56-35-9	7.3E-03	n	7.3E-01	n							2.2E-02	n	2.2E+00	n							
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	7.3E+02	n >S	7.3E+04	n >S	9.2E+03	n >S	1.2E+03	n >S			2.2E+03	n >S	2.2E+05	n >S	1.3E+04	n >S	1.7E+03	n >S			
Trichlorobenzene, 1,2,3-	87-61-6	7.3E-02	n	7.3E+00	n	2.7E+03	n >S	3.5E+02	n >S			2.2E-01	n	2.2E+01	n >S	3.7E+03	n >S	4.8E+02	n >S			
Trichlorobenzene, 1,2,4-	120-82-1	7.0E-02	m	7.0E+00	m	1.6E+04	n >S	2.0E+03	n >S			7.0E-02	m	7.0E+00	m	2.2E+04	n >S	2.8E+03	n >S			
Trichlorobenzene, 1,3,5-	108-70-3	7.3E-02	n	7.3E+00	n	2.0E+03	n >S	2.6E+02	n >S			2.2E-01	n	2.2E+01	n >S	2.9E+03	n >S	3.7E+02	n >S			
Trichloroethane, 1,1,1-	71-55-6	2.0E-01	m	2.0E+01	m	4.0E+04	n >S	5.1E+03	n >S			2.0E-01	m	2.0E+01	m	5.6E+04	n >S	7.2E+03	n >S			
Trichloroethane, 1,1,2-	79-00-5	5.0E-03	m	5.0E-01	m	8.0E+01	c	1.0E+01	c			5.0E-03	m	5.0E-01	m	1.3E+02	c	1.7E+01	c			
Trichloroethylene	79-01-6	5.0E-03	m	5.0E-01	m	1.2E+02	n	1.5E+01	n			5.0E-03	m	5.0E-01	m	1.7E+02	n	2.1E+01	n			
Trichlorofluoromethane	75-69-4	7.3E+00	n	7.3E+02	n	4.1E+03	n >S	5.3E+02	n			2.2E+01	n	2.2E+03	n >S	5.7E+03	n >S	7.4E+02	n			
Trichloronate	327-98-0	7.3E-02	n	7.3E+00	n >S							2.2E-01	n	2.2E+01	n >S							
Trichlorophenol, 2,3,4-	15950-66-0	2.4E+00	n	2.4E+02	n	1.0E+06	n >S	1.4E+05	n >S			7.3E+00	n	7.3E+02	n	1.0E+06	n >S	1.9E+05	n >S			
Trichlorophenol, 2,3,5-	933-78-8	2.4E+00	n	2.4E+02	n	1.0E+06	n >S	1.4E+05	n >S			7.3E+00	n	7.3E+02	n	1.0E+06	n >S	2.0E+05	n >S			
Trichlorophenol, 2,3,6-	933-75-5	2.4E+00	n	2.4E+02	n >S	8.4E+03	n >S	1.1E+03	n >S			7.3E+00	n	7.3E+02	n >S	1.2E+04	n >S	1.5E+03	n >S			
Trichlorophenol, 2,4,5-	95-95-4	2.4E+00	n	2.4E+02	n	4.5E+05	n >S	5.9E+04	n >S			7.3E+00	n	7.3E+02	n	6.4E+05	n >S	8.2E+04	n >S			
Trichlorophenol, 2,4,6-	88-06-2	2.4E-02	n	2.4E+00	n	4.9E+04	c >S	6.4E+03	c >S			7.3E-02	n	7.3E+00	n	8.3E+04	c >S	1.1E+04	c >S			
Trichlorophenol, 3,4,5-	609-19-8	2.4E+00	n	2.4E+02	n	1.0E+06	n >S	1.5E+05	n >S			7.3E+00	n	7.3E+02	n	1.0E+06	n >S	2.1E+05	n >S			
Trichlorophenoxyacetic acid, 2,4,5-	93-76-5	2.4E-01	n	2.4E+01	n	2.5E+05	n >S	3.3E+04	n >S			7.3E-01	n	7.3E+01	n	3.5E+05	n >S	4.6E+04	n >S			
Trichloropropane, 1,1,2-	598-77-6	1.2E-01	n	1.2E+01	n	5.4E+02	n >S	6.9E+01	n >S			3.7E-01	n	3.7E+01	n	7.5E+02	n >S	9.7E+01	n >S			
Trichloropropane, 1,2,3-	96-18-4	1.3E-04	c	1.3E-02	c	6.5E+03	n >S	8.4E+02	n			2.9E-04	c	2.9E-02	c	9.0E+03	n >S	1.2E+03	n			
Triethanolamine	102-71-6	4.9E+00	n	4.9E+02	n	1.0E+06	n	1.0E+06	n			1.5E+01	n	1.5E+03	n	1.0E+06	n	1.0E+06	n			
Triethylamine	121-44-8					6.3E+02	n	8.1E+01	n							8.8E+02	n	1.1E+02	n			
Triethylene glycol	112-27-6	7.3E+01	n	7.3E+03	n							2.2E+02	n	2.2E+04	n							
Triethylphosphorothioate, O, O, O-	126-68-1	2.0E-04	n	2.0E-02	n							6.1E-04	n	6.1E-02	n							
Trifluralin	1582-09-8	1.2E-01	c	1.2E+01	c >S	2.7E+04	n >S	3.4E+03	n >S			2.7E-01	c	2.7E+01	c >S	3.7E+04	n >S	4.8E+03	n >S			
Trimethylamine	75-50-3					1.7E+03	n	2.2E+02	n							2.3E+03	n	3.0E+02	n			
Trimethylbenzene, 1,2,3-	526-73-8	1.2E+00	n	1.2E+02	n >S	1.9E+02	n >S	2.4E+01	n			3.7E+00	n	3.7E+02	n >S	2.6E+02	n >S	3.4E+01	n			
Trimethylbenzene, 1,2,4-	95-63-6	2.4E-01	n	2.4E+01	n	1.9E+02	n >S	2.5E+01	n			7.3E-01	n	7.3E+01	n >S	2.7E+02	n >S	3.4E+01	n			
Trimethylbenzene, 1,3,5-	108-67-8	1.2E+00	n	1.2E+02	n >S	1.3E+02	n >S	1.6E+01	n			3.7E+00	n	3.7E+02	n >S	1.8E+02	n >S	2.3E+01	n			
Trinitrobenzene, 1,3,5-	99-35-4	7.3E-01	n	7.3E+01	n							2.2E+00	n	2.2E+02	n							
Trinitrophenylmethylnitramine (tetryl; nitramine)	479-45-8	9.8E-02	n	9.8E+00	n	4.4E+03	n >S	1.7E+03	n >S			2.9E-01	n	2.9E+01	n	6.2E+03	n >S	2.3E+03	n >S			
Trinitrotoluene, 2,4,6-	118-96-7	1.2E-02	n	1.2E+00	n	2.2E+03	n >S	2.9E+02	n >S			3.7E-02	n	3.7E+00	n	3.1E+03	n >S	4.1E+02	n >S			
Uranium (soluble salts)	7440-61-1	3.0E-02	m >S	3.0E+00	m >S							3.0E-02	m >S	3.0E+00	m >S							
Valeric acid (pentanoic acid)	109-52-4	1.2E+01	n >S	1.2E+03	n >S	2.0E+04	n >S	2.6E+03	n >S			3.7E+01	n >S	3.7E+03	n >S	2.8E+04	n >S	3.6E+03	n >S			
Vanadium	7440-62-2	1.7E-01	n >S	1.7E+01	n >S							5.1E-01	n >S	5.1E+01	n >S							

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential								Commercial/Industrial								
		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh-V}$ 0.5 acre source area		$^{Air}GW_{Inh-V}$ 30 acre source area		$^{GW}GW_{Ing}$[2]		$^{GW}GW_{Class\ 3}$[3]		$^{Air}GW_{Inh-V}$ 0.5 acre source area		$^{Air}GW_{Inh-V}$ 30 acre source area		Secondary
Chemical of Concern	CAS	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	(mg/L)	note[4]	MCL[5] (mg/L)
Vernam	1929-77-7	2.4E-02	n	2.4E+00	n					7.3E-02	n	7.3E+00	n					
Vinyl acetate	108-05-4	2.4E+01	n	2.4E+03	n	1.4E+04	n	1.8E+03	n	7.3E+01	n	7.3E+03	n	2.0E+04	n	2.6E+03	n	
Vinyl chloride	75-01-4	2.0E-03	m	2.0E-01	m	3.8E+00	c	4.9E-01	c	2.0E-03	m	2.0E-01	m	6.4E+00	c	8.3E-01	c	
Vinylcyclohexane	695-12-5	1.2E+01	n >S	1.2E+03	n >S	2.2E+01	n >S	2.8E+00	n >W I	3.7E+01	n >S	3.7E+03	n >S	3.1E+01	n >S	4.0E+00	n >W Ing	
Warfarin	81-81-2	7.3E-03	n	7.3E-01	n	4.6E+03	n >S	6.0E+02	n >S	2.2E-02	n	2.2E+00	n	6.5E+03	n >S	8.4E+02	n >S	
Xylene, m-	108-38-3	1.0E+01	m	1.0E+03	m >S	1.1E+04	n >S	1.4E+03	n >S	1.0E+01	m	1.0E+03	m >S	1.5E+04	n >S	1.9E+03	n >S	
Xylene, o-	95-47-6	1.0E+01	m	1.0E+03	m >S	7.6E+05	n >S	9.8E+04	n >S	1.0E+01	m	1.0E+03	m >S	1.0E+06	n >S	1.4E+05	n >S	
Xylene, p-	106-42-3	1.0E+01	m	1.0E+03	m >S	9.4E+03	n >S	1.2E+03	n >S	1.0E+01	m	1.0E+03	m >S	1.3E+04	n >S	1.7E+03	n >S	
Xylenes	1330-20-7	1.0E+01	m	1.0E+03	m >S	1.0E+04	n >S	1.3E+03	n >S	1.0E+01	m	1.0E+03	m >S	1.4E+04	n >S	1.9E+03	n >S	
Zinc	7440-66-6	7.3E+00	n >S	7.3E+02	n >S					2.2E+01	n >S	2.2E+03	n >S					5.0E+00
6 C aliphatics (TPH)	NA	1.5E+00	n ---	1.5E+02	n > S	3.2E+01	n ---	4.1E+00	n ---	4.4E+00	n ---	4.4E+02	n > S	4.5E+01	n > S	5.8E+00	n ---	---
>6-8 C aliphatics (TPH)	NA	1.5E+00	n ---	1.5E+02	n > S	2.1E+01	n > S	2.7E+00	n ---	4.4E+00	n ---	4.4E+02	n > S	2.7E+03	n > S	3.8E+00	n >W	---
>8-10 C aliphatics (TPH)	NA	2.4E+00	n > S	2.4E+02	n > S	1.3E+01	n > S	2.5E+02	n > S	7.3E+00	n > S	7.3E+02	n > S	1.8E+01	n > S	2.4E+00	n > S	---
>10-12 C aliphatics (TPH)	NA	2.4E+00	n > S	2.4E+02	n > S	8.8E+00	n > S	1.1E+00	n > S	7.3E+00	n > S	7.3E+02	n > S	1.2E+01	n > S	1.6E+00	n > S	---
>12-16 C aliphatics (TPH)	NA	2.4E+00	n > S	2.4E+02	n > S	2.0E+00	n > S	2.6E-01	n >W	7.3E+00	n > S	7.3E+02	n > S	2.8E+00	n > S	3.7E-01	n >W	---
>16-21 C aliphatics (TPH)	NA	4.9E+01	n > S	4.9E+03	n > S	---	--- ---	---	--- ---	1.5E+02	n > S	1.5E+04	n > S	---	--- ---	---	--- ---	---
>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	NA	3.9E+01	n > S	3.9E+03	n > S	---	--- ---	---	--- ---	1.2E+02	n > S	1.2E+04	n > S	---	--- ---	---	--- ---	---
>7-8 C aromatics (TPH)	NA	2.4E+00	n ---	2.4E+02	n ---	1.6E+04	n > S	2.0E+03	n > S	7.3E+00	n ---	7.3E+02	n > S	2.2E+04	n > S	2.8E+03	n > S	---
>8-10 C aromatics (TPH)	NA	9.8E-01	n ---	9.8E+01	n > S	1.8E+03	n > S	2.3E+02	n > S	2.9E+00	n ---	2.9E+02	n > S	2.5E+03	n > S	3.2E+02	n > S	---
>10-12 C aromatics (TPH)	NA	9.8E-01	n ---	9.8E+01	n > S	4.3E+03	n > S	5.5E+02	n > S	2.9E+00	n ---	2.9E+02	n > S	6.0E+03	n > S	7.7E+02	n > S	---
>12-16 C aromatics (TPH)	NA	9.8E-01	n ---	9.8E+01	n > S	7.5E+03	n > S	9.7E+02	n > S	2.9E+00	n ---	2.9E+02	n > S	1.0E+04	n > S	1.4E+03	n > S	---
>16-21 C aromatics (TPH)	NA	7.3E-01	n ---	7.3E+01	n > S	---	--- ---	---	--- ---	2.2E+00	n > S	2.2E+02	n > S	---	--- ---	---	--- ---	---
>21-35 C aromatics (TPH)	NA	7.3E-01	n > S	7.3E+01	n > S	---	--- ---	---	--- ---	2.2E+00	n > S	2.2E+02	n > S	---	--- ---	---	--- ---	---
Transformer mineral oil	NA	1.3E+01	n >S	1.3E+03	n >S	5.6E+01	n ---	7.3E+00	n ---	4.0E+01	n >S	4.0E+03	n >S	7.9E+01	n ---	1.0E+01	n ---	---

Footnotes

[1] In accordance with §350.72(b), when establishing Tier 1 PCLs for individual COCs for each of the individual and combined human health exposure pathways, the person must evaluate whether the PCLs need to be adjusted to lower concentrations to meet the cumulative carcinogenic risk level and hazard index criteria specified in §350.72(c). For COCs which exhibit both carcinogenic and noncarcinogenic characteristics, they shall be evaluated as both a carcinogen and noncarcinogen when determining whether the PCL established for an individual COC for each of the individual and combined human health exposure pathways needs to be adjusted to a lower concentration to meet the cumulative risk and hazard criteria. The person shall then use the lower of the carcinogenic or noncarcinogenic PCL as the Tier 1 human health PCL. In other words, the Tier 1 PCLs provided in this table for an individual COC should not be used as the final Tier 1 human health PCL for any of the individual or combined exposure pathways in cases where there are more than 10 carcinogenic and/or more than 10 noncarcinogenic COCs within a source medium unless it can be demonstrated that further downward adjustment is not necessary to meet the cumulative risk and hazard criteria.

[2] based on primary MCLs when available

[3] 100 x $^{GW}GW_{Ing}$

[4] c = carcinogenic; n = noncarcinogenic; m = primary MCL-based; a = EPA Action Level-based; > S = solubility limit exceeded during calculation; < GW Ing = less than $^{GW}GW_{Ing}$ value

[5] Values for ammonia and MTBE are based on taste and odor.

[6] The total MCL for trihalomethanes (bromodichloromethane, bromoform, chloroform, and dibromochloromethane) is 0.08 mg/L.

[7] Persons must use the value provided in the "Secondary MCL" column of this table as the $^{GW}GW_{Ing}$ PCL for MTBE if the conditions described in §350.74(f)(3) exist.

Texas Commission on Environmental Quality - Table 3
Tier 1 Groundwater PCLs[1]

Last Revised: March 25, 2009

		Residential				Commercial/Industrial				
Chemical of Concern	CAS	$GW GW_{Ing}$[2] (mg/L) note[4]	$GW GW_{Class\ 3}$[3] (mg/L) note[4]	$Air GW_{Inh-V}$ 0.5 acre source area (mg/L) note[4]	$Air GW_{Inh-V}$ 30 acre source area (mg/L) note[4]	$GW GW_{Ing}$[2] (mg/L) note[4]	$GW GW_{Class\ 3}$[3] (mg/L) note[4]	$Air GW_{Inh-V}$ 0.5 acre source area (mg/L) note[4]	$Air GW_{Inh-V}$ 30 acre source area (mg/L) note[4]	Secondary MCL[5] (mg/L)
*These compounds, acetic acid, ammonium polyphosphate, ammonium salts, calcium, chloride, ehtylene, hydrogen chloride (hydrochloric acid), iron, limonene, d-, magnesium, phosphorus, total, potassium, sodium, sulfate, sulfide, and sulfure, are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tceq.state.tx.us/remediation/trrp/trrp.htm.										
All values capped at 1E+06										

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Acenaphthene		3.0E+03		3.0E+03
Acenaphthylene		3.8E+03		3.8E+03
Acetaldehyde	1.7E+02	1.4E+02	8.7E+01	7.3E+01
Acetate, 2-ethoxyethanol		9.2E+02		7.0E+02
Acetate, isoamyl		2.9E+03		1.9E+03
Acetate, isobutyl		2.6E+03		1.9E+03
Acetate, sec-butyl		3.1E+03		2.6E+03
Acetic acid*				
Acetone (2-propanone)		9.8E+03		5.4E+03
Acetone cyanohydrin		1.9E+02		1.8E+02
Acetonitrile		8.7E+02		5.3E+02
Acetophenone		2.8E+03		1.8E+03
Acetylaminofluorene, 2-	1.2E+00		1.1E+00	
Acifluorfen, sodium		7.6E+02		6.9E+02
Acridine		2.0E+02		2.0E+02
Acrolein		1.1E+00		5.7E-01
Acrylamide	7.0E-01	1.3E+01	5.4E-01	1.3E+01
Acrylic acid		1.2E+02		6.2E+01
Acrylonitrile	3.6E+00	2.2E+01	2.2E+00	1.3E+01
Adipic acid (hexanedioic acid)		7.5E+02		3.9E+02
Alachlor	5.9E+01	6.7E+02	5.9E+01	6.7E+02
Aldicarb		6.7E+01		6.7E+01
Aldicarb sulfone		6.7E+01		6.7E+01
Aldrin	5.0E-02	5.9E-01	5.0E-02	5.9E-01
Allyl alcohol		1.6E+01		8.6E+00
Allyl chloride		1.5E+01		7.8E+00
Aluminum		6.5E+04		6.4E+04
Ametryn		6.0E+02		6.0E+02
Amino-2,6-dinitrotoluene, 4-	4.7E+02	9.8E+00	4.7E+02	8.9E+00
Amino-4,6-dinitrotoluene, 2-	4.7E+02	1.0E+01	4.7E+02	9.3E+00
Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	7.7E-01		7.7E-01	
Aminopyridine, 4-		1.3E+00		1.2E+00
Ammonia		1.5E+03		7.9E+02
Ammonium polyphosphate*				
Ammonium salts*				
Aniline	8.2E+02	1.0E+02	8.2E+02	5.9E+01
Anthracene		1.8E+04		1.8E+04
Anthraquinone, 9,10-		1.3E+03		1.3E+03
Antimony		1.5E+01		1.5E+01
Aramite	1.1E+02	2.4E+03	1.1E+02	2.4E+03
Arsenic	3.4E+01	2.4E+01	3.4E+01	2.4E+01
Arsine		7.7E-01		3.9E-01
Asbestos	2.9E+03		1.5E+03	
Atrazine	2.1E+01	1.4E+03	2.1E+01	1.0E+03
Azinphos-methyl (guthion)		1.0E+02		1.0E+02
Azobenzene	3.7E+01		3.6E+01	
Barium		8.0E+03		7.8E+03
Bayleton		2.0E+03		2.0E+03

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Benefin (benfluralin)		1.9E+04		1.9E+04
Benomyl		3.3E+03		3.3E+03
Benz-a-anthracene	5.7E+00		5.6E+00	
Benzaldehyde		4.5E+02		2.4E+02
Benzene	6.6E+01	3.0E+02	4.8E+01	2.9E+02
Benzenedicarbonitrile, 1,3-		4.0E+02		4.0E+02
Benzenedicarboxylic acid, 1,2-disodecyl ester		3.3E+03		3.3E+03
Benzenethiol		7.4E-01		6.8E-01
Benzidine	1.5E-02	2.0E+02	1.3E-02	2.0E+02
Benzo-a-pyrene	5.6E-01		5.6E-01	
Benzo-b-fluoranthene	5.7E+00		5.7E+00	
Benzo-e-pyrene		1.8E+03		1.8E+03
Benzo-g,h,i-perylene		1.8E+03		1.8E+03
Benzoic acid		6.9E+02		3.5E+02
Benzo-j-fluoranthene	5.4E+00		5.3E+00	
Benzo-k-fluoranthene	5.7E+01		5.7E+01	
Benzophenone		4.5E+02		4.5E+02
Benzotrichloride	3.6E-01	6.9E+01	3.6E-01	3.5E+01
Benzoyl peroxide		2.3E+03		1.8E+03
Benzyl alcohol		7.1E+03		4.0E+03
Benzyl chloride	3.6E+01	2.6E+01	3.6E+01	1.4E+01
Benzyl dichloride	2.8E+01	1.1E+02	2.8E+01	5.7E+01
Beryllium	9.4E+03	3.8E+01	4.8E+03	3.8E+01
Biphenyl, 1,1-		2.5E+02		1.3E+02
Biphenyl, 1,1'-, 2-phenoxy-		3.9E+03		3.9E+03
Biquinoline, 2,2'-		1.8E+02		1.8E+02
Bis (2-chloroethoxy) methane	3.1E+00	2.0E+02	2.5E+00	2.0E+02
Bis (2-chloroethyl) ether	2.2E+00		1.4E+00	
Bis (2-chloroisopropyl) ether	5.1E+01	2.7E+03	4.1E+01	2.7E+03
Bis (2-chloromethyl) ether	4.8E-03		2.7E-03	
Bis (2-ethyl-hexyl) phthalate	4.3E+01	2.7E+02	4.3E+01	2.7E+02
Bismuth		3.7E+04		3.7E+04
Bisphenol A		3.2E+03		3.1E+03
Boron		1.6E+04		1.6E+04
Bromacil		6.7E+03		6.7E+03
Bromo-2-chloroethane, 1-		6.2E+02		3.5E+02
Bromobenzene		1.5E+02		7.9E+01
Bromodichloromethane	9.8E+01	1.6E+03	9.8E+01	1.6E+03
Bromoform	4.0E+02	1.6E+03	2.8E+02	1.6E+03
Bromomethane		4.6E+01		2.9E+01
Bromophenyl phenylether, 4-	2.8E-01		2.7E-01	
Butadiene, 1,3-	7.2E+02	5.1E+02	3.7E+02	2.6E+02
Butadiene, 2-methyl-1,3- (isoprene)		4.8E+03		4.7E+03
Butanal (butyraldehyde)		3.5E+03		2.8E+03
Butane, 2,3-dimethyl-		4.8E+03		4.7E+03
Butanoic acid (butyric acid)		1.3E+02		6.6E+01
Butanol, 2-		5.2E+03		3.8E+03

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Butanol, 2-methyl-2-		8.0E+02		7.8E+02
Butanol, n-		2.9E+03		1.8E+03
Butene, 1-		4.8E+03		4.7E+03
Butene, cis-2-		4.8E+03		4.7E+03
Butene, trans-2-		4.8E+03		4.7E+03
Butoxy ethanol, 2- (Ethylene glycol monobutyl ether; EGBE)		3.3E+04		3.2E+04
Butyl acetate		1.1E+03		6.1E+02
Butyl acrylate		1.1E+02		6.2E+01
Butyl benzyl phthalate	1.6E+03	7.3E+03	1.6E+03	5.7E+03
Butyl ether, n- (dibutyl ether)		1.8E+03		1.0E+03
Butyl methacrylate		5.7E+03		4.8E+03
Butylate		3.3E+03		3.3E+03
Butylbenzene, n-		1.9E+03		1.5E+03
Butylbenzene, sec-		2.1E+03		1.6E+03
Butylbenzene, tert-		1.9E+03		1.4E+03
Cacodylic acid		2.0E+02		2.0E+02
Cadmium	1.3E+04	5.2E+01	6.5E+03	5.2E+01
Calcium*				
Caprolactam		3.2E+02		1.7E+02
Captan	1.3E+03	4.9E+03	1.3E+03	3.5E+03
Carbaryl		2.5E+03		1.6E+03
Carbazole	2.3E+02		2.3E+02	
Carbofuran		3.1E+01		1.6E+01
Carbon disulfide		4.6E+03		3.3E+03
Carbon tetrachloride	1.6E+01	2.0E+01	9.7E+00	1.2E+01
Carbophenothion		8.2E+02		8.2E+02
Carbosulfan		4.3E+02		4.3E+02
Carboxin		6.7E+03		6.7E+03
Chloral		6.9E+02		3.7E+02
Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)		7.5E+02		4.1E+02
Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)		1.0E+03		1.0E+03
Chlordane (technical)	6.0E+00	2.0E+01	5.9E+00	2.0E+01
Chlordane, cis- (alpha chlordane)	1.3E+01	3.2E+01	1.3E+01	3.2E+01
Chlordane, gamma	7.4E+00	2.3E+01	7.3E+00	2.3E+01
Chlorfenvinphos		1.4E+01		9.6E+00
Chloride*				
Chlorine		2.3E+01		1.2E+01
Chloro-1,3-butadiene, 2-		1.1E+02		5.5E+01
Chloro-2-propanol, 1-		1.6E+03		1.6E+03
Chloro-3-methylphenol, 4-		3.3E+02		3.3E+02
Chloroaniline, p-	2.3E+01	2.2E+02	2.3E+01	2.0E+02
Chlorobenzene		5.2E+02		3.2E+02
Chlorobenzilate	1.7E+01	1.3E+03	1.6E+01	1.3E+03
Chlorobromomethane (bromochloromethane)		6.2E+02		3.5E+02
Chlorodifluoromethane		7.7E+05		3.9E+05

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Chloroethane (ethyl chloride)		2.7E+04		2.3E+04
Chloroethanol, 2-		3.4E+02		1.8E+02
Chloroethoxy ethene, 2- (2-chloroethylvinylether)	5.5E+00	4.5E+00	5.5E+00	2.3E+00
Chloroform	1.6E+01	5.3E+02	8.0E+00	4.0E+02
Chlorohexane, 1-		2.7E+03		2.3E+03
Chloromethane (methyl chloride)	1.4E+02	1.4E+03	8.4E+01	7.1E+02
Chloronaphthalene, 1- (Chloronaphthalene, alpha-)		4.6E+03		4.6E+03
Chloronaphthalene, 2- (chloronaphthalene, beta)		5.0E+03		5.0E+03
Chloronitrobenzene, p- (1-chloro-4-nitrobenzene)	7.5E+02	3.2E+01	7.5E+02	2.2E+01
Chlorophenol, 2-		3.8E+02		3.6E+02
Chlorophenol, 3-		3.2E+02		3.2E+02
Chlorophenol, 4-		3.2E+02		3.2E+02
Chlorophenyl phenylether, 4-	1.6E-01		1.5E-01	
Chloropropane, 2-		9.4E+02		6.0E+02
Chlorothalonil	4.3E+02	1.0E+03	4.3E+02	1.0E+03
Chlorotoluene, o- (2-chlorotoluene)		1.0E+03		8.3E+02
Chlorotoluene, p- (4-chlorotoluene)		4.8E+00		2.5E+00
Chlorpyrifos		9.3E+01		7.4E+01
Chromium (III)		3.0E+04		2.3E+04
Chromium (total)		3.0E+04		2.3E+04
Chromium (VI)	1.9E+03	1.2E+02	9.7E+02	1.2E+02
Chrysene	5.6E+02		5.6E+02	
Cobalt	2.5E+03	2.1E+01	1.3E+03	2.1E+01
Copolymer acrylamide		2.8E+00		1.6E+00
Copper		5.5E+02		5.5E+02
Coronene		1.3E+02		1.3E+02
Coumaphos		4.3E+02		4.3E+02
Cresol		1.6E+03		1.1E+03
Cresol, m- (3-methylphenol)		1.6E+03		1.1E+03
Cresol, o- (2-methylphenol)		1.5E+03		1.0E+03
Cresol, p- (4-methylphenol)		3.0E+02		2.7E+02
Crotonaldehyde	3.2E+00	1.9E+02	3.2E+00	9.9E+01
Cumene (isopropylbenzene)		4.3E+03		3.0E+03
Cyanazine	5.6E+00	1.3E+02	5.6E+00	1.3E+02
Cyanide		1.6E+03		1.6E+03
Cyanogen		2.9E+02		1.6E+02
Cycloate		3.7E+03		3.7E+03
Cyclohexane		7.5E+04		4.2E+04
Cyclohexanol		2.9E+04		1.5E+04
Cyclohexanone		4.9E+03		2.6E+03
Cyclohexene-1-methanol, 3-		1.6E+03		1.6E+03
Cyclopentane, methyl-		5.3E+03		4.0E+03

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		**30 acre source area**	
Chemical of Concern	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**
Cyclotetramethylenetetranitramine (HMX)		3.5E+02		2.0E+02
Cyclotrimethylenetrinitramine (RDX)	4.3E+01	4.4E+01	4.3E+01	2.5E+01
Cymene (isopropyltoluene)		3.7E+03		2.5E+03
Cymoxanil		8.7E+02		8.7E+02
Dacthal (DCPA)		6.2E+02		6.2E+02
Dalapon, sodium salt (2,2-dichloropropanoic acid)		2.0E+03		2.0E+03
DDD	1.4E+01		1.4E+01	
DDE	1.0E+01		1.0E+01	
DDT	5.4E+00	1.9E+01	5.4E+00	1.9E+01
Demeton		2.7E+00		2.7E+00
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)		2.7E+03		2.7E+03
Diallate	3.8E+01		3.8E+01	
Diazinon		3.1E+01		2.1E+01
Dibenz(a,h)acridine	3.7E+00		3.7E+00	
Dibenz(a,j)acridine	5.8E+00		5.8E+00	
Dibenz-a,h-anthracene	5.5E-01		5.5E-01	
Dibenzo(a,e)pyrene	6.1E-01		6.1E-01	
Dibenzo(a,h)pyrene	6.1E-02		6.1E-02	
Dibenzo(a,i)pyrene	6.1E-02		6.1E-02	
Dibenzofuran		2.7E+02		2.7E+02
Dibenzothiophene		1.9E+02		1.9E+02
Dibromo-3-chloropropane, 1,2-	1.5E-01	5.0E+00	8.0E-02	3.2E+00
Dibromochloromethane (chlorodibromomethane)	7.2E+01	1.6E+03	7.2E+01	1.6E+03
Dibromofluoromethane		1.3E+04		1.2E+04
Dicamba		9.4E+02		6.3E+02
Dichlormid		1.7E+03		1.7E+03
Dichloro-2-butene, 1,4-	2.0E-01		1.0E-01	
Dichloro-2-butene, 1,4- trans	2.0E-01		1.1E-01	
Dichlorobenzene, 1,2-		7.2E+02		3.9E+02
Dichlorobenzene, 1,3-		1.2E+02		6.2E+01
Dichlorobenzene, 1,4-	2.5E+02	2.4E+03	2.5E+02	1.3E+03
Dichlorobenzidine, 3,3-	1.0E+01		1.0E+01	
Dichlorobutane, 2,3-		9.5E+01		5.2E+01
Dichlorodifluoromethane		1.3E+04		1.2E+04
Dichloroethane, 1,1-		4.5E+03		2.6E+03
Dichloroethane, 1,2-	1.1E+01	1.6E+03	6.4E+00	1.5E+03
Dichloroethylene, 1,1-		2.3E+03		1.6E+03
Dichloroethylene, cis-1,2-		7.7E+02		7.2E+02
Dichloroethylene, trans-1,2		5.9E+02		3.7E+02
Dichlorofluoromethane		6.2E+02		3.3E+02
Dichlorophenol, 2,3-		2.0E+02		2.0E+02
Dichlorophenol, 2,4-		2.0E+02		1.9E+02
Dichlorophenol, 2,5-		2.0E+02		2.0E+02
Dichlorophenol, 2,6-		6.5E+01		6.5E+01

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Dichlorophenol, 3,4-		2.0E+02		2.0E+02
Dichlorophenol, 3,5-		2.0E+02		2.0E+02
Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)		5.3E+02		5.3E+02
Dichlorophenoxyacetic acid, 2,4- (2,4-D)		4.9E+02		3.7E+02
Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)		6.7E+02		6.7E+02
Dichloropropane, 1,2-	8.9E+01	6.1E+01	8.9E+01	3.1E+01
Dichloropropane, 1,3-	3.6E+01	2.6E+02	2.6E+01	1.4E+02
Dichloropropane, 2,2-	8.9E+01	6.1E+01	8.9E+01	3.1E+01
Dichloropropanol, 2,3-		2.0E+02		2.0E+02
Dichloropropene, 1,1-	3.6E+01	2.7E+02	2.6E+01	1.5E+02
Dichloropropene, 1,3- (mixed isomers)	3.6E+01	2.7E+02	2.6E+01	1.5E+02
Dichloropropene, cis 1,3-	1.1E+01	7.6E+00	1.1E+01	7.1E+00
Dichloropropene, trans 1,3-	3.6E+01	2.7E+02	2.6E+01	1.5E+02
Dichlorvos	1.6E+01	3.3E+01	1.6E+01	3.3E+01
Dicrotophos (bidrin)		6.7E+00		6.7E+00
Dicyclopentadiene		6.6E+02		6.6E+02
Dieldrin	1.5E-01	2.2E+00	1.5E-01	2.2E+00
Diethanolamine		3.0E+01		2.7E+01
Diethyl phthalate		2.7E+03		1.4E+03
Diethylene glycol		1.3E+05		1.3E+05
Diethylene glycol monobutyl		5.7E+02		5.0E+02
Diethylhexyl adipate	3.9E+03	1.8E+04	3.9E+03	1.2E+04
Diethylstilbestrol	7.1E-04		7.1E-04	
Diisobutylene (trimethyl-1-pentene, 2,4,4-)		1.9E+03		1.2E+03
Diisopropylbenzene, p-		7.0E+02		6.1E+02
Diisopropyl ether (2,2'-oxybis-propane)		3.5E+03		2.3E+03
Dimethenamid		1.0E+03		1.0E+03
Dimethoate		1.3E+01		1.3E+01
Dimethoxybenzidine, 3,3'-	3.4E+02		3.4E+02	
Dimethylphenethylamine, alpha, alpha-		1.3E+02		1.3E+02
Dimethyl phenol, 2,4-		1.1E+03		8.8E+02
Dimethylaminoazobenzene, p-		6.4E-01		6.4E-01
Dimethylbenz-a-anthracene, 7,12-	1.7E-02		1.7E-02	
Dimethylbenzidine, 3,3'-	4.3E-01		4.3E-01	
Dimethylnaphthalene, 1,3-		2.3E+03		2.3E+03
Dimethylphthalate		1.3E+03		6.6E+02
Di-n-butyl phthalate		5.1E+03		4.4E+03
Dinitro-2-methylphenol, 4,6-(dinitro-o-cresol, 4, 6-)		5.8E+00		5.2E+00
Dinitrobenzene, 1,3-(dinitrobenzene, 2,4-)		6.5E+00		6.3E+00
Dinitrobenzene, 1,4-		6.5E+00		6.4E+00

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Dinitrophenol, 2,4-		1.3E+02		1.3E+02
Dinitrophenol, 2,5-		1.3E+02		1.3E+02
Dinitrotoluene, 2,4-	6.9E+00	2.4E+01	6.9E+00	1.3E+01
Dinitrotoluene, 2,6-	6.9E+00	2.6E+01	6.9E+00	1.7E+01
Di-n-octyl phthalate		1.3E+03		1.3E+03
Dinoseb		6.7E+01		6.7E+01
Dioxane 1,4-	5.5E+02	2.4E+03	5.5E+02	1.5E+03
Diphenyl ether		3.2E+02		2.8E+02
Diphenylamine		1.2E+03		9.0E+02
Diphenylhydrazine, 1,2-	5.6E+00		5.4E+00	
Dipropylene glycol		5.7E+03		4.5E+03
Diquat		5.0E+01		3.1E+01
Disodium iminodiacetate (iminodiacetic acid, disodium		6.7E+02		6.7E+02
Disodium iminodiacetate (iminodiacetic acid, disodium		6.7E+02		6.7E+02
Disulfoton		2.6E+00		2.6E+00
Diuron		1.3E+02		1.3E+02
Dodecylphenol, 4-		3.3E+03		3.3E+03
Dodecylphenol, 4-		3.3E+03		3.3E+03
Endosulfan		6.6E+01		3.7E+01
Endosulfan I		6.1E+01		4.7E+01
Endosulfan II		2.7E+02		2.7E+02
Endosulfan sulfate		3.8E+02		3.8E+02
Endothall		1.3E+03		1.3E+03
Endrin		8.8E+00		8.7E+00
Endrin aldehyde		1.9E+01		1.9E+01
Endrin ketone		1.9E+01		1.9E+01
Endrin ketone		1.9E+01		1.9E+01
Epichlorohydrin	2.8E+02	2.5E+01	1.8E+02	1.3E+01
EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioate)		6.7E-01		6.7E-01
Esfenvalerate		7.4E+01		7.4E+01
Ethalfluralin (sonolan)	4.7E+01	2.5E+03	4.7E+01	2.5E+03
Ethanol		8.6E+04		4.5E+04
Ethanol, 2-amino-		1.2E+02		1.1E+02
Ethanol, 2-(2-aminoethoxy)-		4.1E+01		4.0E+01
Ethanol, 2-(2-ethoxyethoxy)-		1.6E+05		1.6E+05
Ethion		2.7E+01		2.7E+01
Ethoprop	1.7E+02	6.7E+00	1.7E+02	6.7E+00
Ethoxy ethanol, 2-		2.8E+03		1.5E+03
Ethyl acetate		1.8E+04		1.0E+04
Ethyl acrylate	1.3E+02	4.8E+02	1.3E+02	2.5E+02
Ethyl benzene		5.3E+03		4.0E+03
Ethyl dipropylthiocarbamate, S-		1.7E+03		1.7E+03
Ethyl ether		8.7E+03		6.0E+03
Ethyl methacrylate		4.5E+03		3.3E+03
Ethyl methanesulfonate	3.4E+01		2.7E+01	

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)		8.0E+01		7.9E+01
Ethyl-1-hexanol, 2-		7.9E+03		6.6E+03
Ethyl-2-hexenal, 2-		3.4E+03		2.0E+03
Ethyl-2-methyl benzene, 1-		5.6E+03		3.4E+03
Ethyl-4-methyl benzene, 1-		5.0E+03		3.0E+03
Ethylene*				
Ethylene dibromide (dibromoethane, 1,2-)	7.3E-01	1.7E+02	4.3E-01	1.0E+02
Ethylene glycol		3.0E+03		1.6E+03
Ethylene oxide	2.2E+00		1.4E+00	
Ethylene thiourea	4.3E+01	5.3E+00	4.3E+01	5.2E+00
Ethylenediamine		2.5E+03		1.5E+03
Ethylenimine	5.5E-02		3.9E-02	
Ethylhexyl acrylate, 2-	9.8E+01	2.8E+03	9.8E+01	1.4E+03
Famphur		2.0E+00		2.0E+00
Fensulfothion		6.7E+01		6.7E+01
Fenthion		4.7E+00		4.7E+00
Fluoranthene		2.3E+03		2.3E+03
Fluorene		2.3E+03		2.3E+03
Fluorine (soluble fluoride)		4.7E+03		4.6E+03
Fluorochloridone		4.8E+02		4.6E+02
Fonofos		1.3E+02		1.3E+02
Formaldehyde		9.3E+02		4.9E+02
Formic acid		2.1E+02		1.1E+02
Furan		6.9E+01		6.0E+01
Furfural		1.8E+02		1.4E+02
Glycidylaldehyde		2.7E+01		2.3E+01
Glyphosate		6.7E+03		6.7E+03
Heptachlor	1.3E-01	7.1E+00	1.3E-01	7.1E+00
Heptachlor epoxide	2.4E-01	5.4E-01	2.4E-01	5.4E-01
Heptane, n-		4.8E+03		4.7E+03
Heptanoic acid, n-		1.2E+02		6.3E+01
Hexachlorobenzene	1.1E+00	2.9E+01	1.0E+00	2.9E+01
Hexachlorobutadiene	2.0E+01	6.7E+01	1.2E+01	6.7E+01
Hexachlorocyclohexane, alpha (alpha-BHC)	2.6E-01	2.7E+02	2.5E-01	2.7E+02
Hexachlorocyclohexane, beta (beta-BHC)	9.3E-01		9.2E-01	
Hexachlorocyclohexane, delta (delta-BHC)	2.9E+00	2.2E+01	2.9E+00	2.2E+01
Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	1.1E+00	9.1E+00	1.1E+00	9.0E+00
Hexachlorocyclohexane, techn (technical-BHC)	1.3E+00		1.3E+00	
Hexachlorocyclopentadiene		1.4E+01		7.2E+00
Hexachloroethane	2.5E+02	6.7E+01	2.0E+02	6.7E+01
Hexachlorophene		2.0E+01		2.0E+01
Hexachloropropylene	2.5E+02	6.7E+01	2.0E+02	6.7E+01

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Hexanal, 2-ethyl-		3.3E+03		2.0E+03
Hexane, n-		3.3E+03		2.5E+03
Hexanediamine, 1,6-		2.0E+02		1.4E+02
Hexanediol, 1,6-		3.0E+05		2.8E+05
Hexanoic acid		1.3E+02		6.9E+01
Hexanone, 2-		1.1E+02		5.6E+01
Hexazinone		1.0E+03		6.7E+02
Hexene, 1-		1.6E+03		9.1E+02
Hexylene glycol (2-methyl-2,4-pentanediol)		2.5E+01		1.3E+01
Hydrazine	3.8E-01		2.1E-01	
Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)		1.6E+02		8.1E+01
Hydrogen chloride (hydrochloric acid)*				
Hydroquinone	8.4E+01	2.7E+03	8.4E+01	2.7E+03
Indene		1.0E+02		5.6E+01
Indeno-1,2,3-cd-pyrene	5.7E+00		5.7E+00	
Iron*				
Isoamyl alcohol		4.0E+02		4.0E+02
Isobutyl alcohol		5.6E+03		3.3E+03
Isobutylene (2-methyl-1-propene)		1.7E+06		8.7E+05
Isobutyric acid (2-methylpropanoic acid)		1.1E+02		5.9E+01
Isodecanol		7.1E+01		7.1E+01
Isodrin	2.7E-02	2.0E-01	2.7E-02	2.0E-01
Isophorone	4.9E+03	2.2E+03	4.9E+03	1.2E+03
Isopropyl acetate		5.7E+03		5.7E+03
Isopropyl alcohol		1.1E+04		8.4E+03
Isosafrole	1.7E+01		1.5E+01	
Kelthane (dicofol)		2.7E+02		2.7E+02
Kepone (chlordecone)	4.5E-01	1.1E+01	4.4E-01	1.1E+01
Lead (inorganic)		5.0E+02		5.0E+02
Limonene, d-*				
Lithium		1.3E+02		1.3E+02
Magnesium*				
Malathion		1.1E+03		8.8E+02
Maleic anhydride		2.0E+02		1.1E+02
Maleic hydrazide		1.4E+04		9.3E+03
Malononitrile		6.6E+00		6.6E+00
Mancozeb		2.0E+03		2.0E+03
Manganese		3.7E+03		3.4E+03
MCPA (4-(chloro-2-methylphenoxy) acetic acid)		3.3E+01		3.3E+01
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.7E+01		6.7E+01
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.7E+01		6.7E+01

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.7E+01		6.7E+01
Mercuric chloride (pH = 4.9)		3.6E+00		2.1E+00
Mercuric chloride (pH = 6.8)		8.3E+00		5.5E+00
Mercury (pH = 4.9)[1]		3.6E+00		2.1E+00
Merphos		2.0E+00		2.0E+00
Methacrylic acid (2-methyl-2-propenoic acid)		6.3E+02		5.2E+02
Methacrylonitrile		7.1E+00		6.3E+00
Methanol		9.2E+03		5.3E+03
Methapyrilene	1.0E+00	9.0E+01	1.0E+00	4.6E+01
Methomyl		7.9E+02		5.3E+02
Methoxychlor		2.7E+02		2.7E+02
Methoxyethanol, 2-		3.1E+02		1.6E+02
Methyl acetate (acetic acid, methyl ester)		8.3E+03		4.5E+03
Methyl acrylate		6.5E+01		4.1E+01
Methyl amyl ketone (2-		3.9E+03		3.8E+03
Methyl chrysene, 1-	5.8E+02		5.8E+02	
Methyl chrysene, 2-	5.8E+02		5.8E+02	
Methyl chrysene, 6-	5.7E+01		5.7E+01	
Methyl cyclohexane		4.1E+04		2.2E+04
Methyl ethyl ketone (2-butanone)		3.4E+04		2.7E+04
Methyl iodide (iodomethane)		7.1E+01		5.2E+01
Methyl isobutyl ketone (4-methyl-2-pentanone)		5.9E+03		5.4E+03
Methyl mercury		8.0E+00		8.0E+00
Methyl methacrylate		9.8E+03		5.3E+03
Methyl methanesulfonate	3.3E+01		2.6E+01	
Methyl parathion		1.5E+01		1.4E+01
Methyl-1-butene, 2-		4.8E+03		4.7E+03
Methyl-1-propanal, 2- (isobutyraldehyde)		1.9E+03		1.3E+03
Methyl-2-butene, 2-		4.8E+03		4.7E+03
Methyl-2-pentenal, 2-	3.2E+00	9.4E+01	3.2E+00	4.9E+01
Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	1.4E+02		1.4E+02	
Methylcholanthrene, 3-	1.9E-01		1.9E-01	
Methylene bromide (dibromomethane)	8.1E+02	2.6E+02	8.1E+02	1.4E+02
Methylene chloride (dichloromethane)	3.9E+02	4.4E+03	2.6E+02	4.1E+03
Methylene-bis (2-chloroaniline) 4,4'-	4.6E+01	1.3E+02	4.5E+01	1.3E+02
Methylmecury hydroxide		9.9E-01		5.5E-01
Methylnaphthalene, 1-	1.5E+02	4.4E+03	1.5E+02	4.4E+03
Methylnaphthalene, 2-		2.5E+02		2.5E+02
Methylpyrrolidone, N-		1.2E+03		1.1E+03
Methyltetrahydrofuran, 2-	1.5E+02	1.6E+04	8.6E+01	1.6E+04

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Methyltetrahydropyran, 2-	1.7E+02	1.6E+04	9.8E+01	1.6E+04
Metolachlor		1.0E+04		1.0E+04
Metribuzin		1.7E+03		1.7E+03
Mirex		1.3E+01		1.3E+01
Molinate		1.3E+02		1.3E+02
Molybdenum		1.6E+02		1.6E+02
Monocrotophos		2.2E+01		1.5E+01
Morpholine		1.4E+02		7.2E+01
MTBE (methyl tert-butyl ether)	9.8E+02	8.0E+02	5.9E+02	7.9E+02
Naled		8.7E+01		6.6E+01
Naphthalene		2.2E+02		1.2E+02
Naphthoquinone, 1,4-		1.9E+01		9.7E+00
Naphthylamine, 1-		1.3E+03		1.3E+03
Naphthylamine, 2-	2.6E+00		2.6E+00	
Napropamide		6.7E+03		6.7E+03
Neopentyl glycol		2.0E+04		2.0E+04
Nickel and compounds	4.7E+04	8.4E+02	2.4E+04	8.3E+02
Nitrate		1.3E+05		1.3E+05
Nitrite		8.0E+03		8.0E+03
Nitroaniline, 2-		1.4E+01		1.1E+01
Nitroaniline, 3-	1.2E+02	2.0E+01	1.2E+02	1.9E+01
Nitroaniline, 4-	2.3E+02	2.2E+02	2.3E+02	1.9E+02
Nitrobenzene	6.6E+01	1.2E+02	3.4E+01	1.1E+02
Nitroglycerin	2.8E+02	6.7E+00	2.8E+02	6.7E+00
Nitrophenol, 2-		1.1E+02		1.0E+02
Nitrophenol, 3-		1.2E+02		1.1E+02
Nitrophenol, 4-		7.3E+01		5.1E+01
Nitropropane, 2-	1.3E-01	1.1E+01	6.8E-02	1.1E+01
Nitroquinoline-N-oxide, 4-	4.0E-01		3.3E-01	
Nitrosodiethanolamine	1.7E+00		1.7E+00	
Nitrosodiethylamine, n-	2.5E-02		1.8E-02	
Nitrosodimethylamine, n-	7.4E-02	5.8E-01	5.5E-02	5.2E-01
Nitrosodi-n-butylamine, n-	4.7E-01		3.3E-01	
Nitrosodi-n-propylamine, n-	4.0E-01		4.0E-01	
Nitrosodiphenylamine	5.7E+02		5.7E+02	
Nitroso-methyl-ethyl-amine, n-	2.8E-01		2.8E-01	
Nitrosomorpholine, N-	5.0E-01		3.9E-01	
Nitroso-n-ethylurea, n-	3.4E-02		3.4E-02	
Nitrosopiperidine, N-	3.6E-01		2.9E-01	
Nitrosopyrrolidine, n-	1.6E+00		1.3E+00	
Nitrotoluene, m-		3.8E+02		2.7E+02
Nitrotoluene, o-	2.1E+01	5.6E+01	2.1E+01	5.3E+01
Nitrotoluene, p-	2.9E+02	2.0E+02	2.9E+02	1.7E+02
Nonachlor, cis-	5.6E+00	1.9E+01	5.6E+00	1.9E+01
Nonachlor, trans-	5.6E+00	1.9E+01	5.6E+00	1.9E+01
Nonanal		1.3E+04		1.3E+04
Nonene, 1-n		1.5E+02		7.8E+01
Nonylphenol		6.5E+03		6.5E+03
Nonylphenol		6.5E+03		6.5E+03

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Nonylphenol		6.5E+03		6.5E+03
Nonylphenol ethoxylate		7.9E+03		7.9E+03
Octamethylpyrophosphoramide		1.3E+02		1.3E+02
Octanone		4.9E+03		4.9E+03
Oxamyl		1.7E+03		1.7E+03
Oxychlordane	5.6E+00	1.9E+01	5.6E+00	1.9E+01
Paraquat		3.0E+02		3.0E+02
Parathion (ethyl parathion)		1.2E+02		7.3E+01
Pebulate		3.3E+03		3.3E+03
Pendimethalin		2.5E+03		2.5E+03
Pentachlorobenzene		5.3E+01		5.3E+01
Pentachloroethane	3.9E+01	2.5E+03	2.8E+01	2.5E+03
Pentachloronitrobenzene	1.0E+01	8.6E+01	1.0E+01	6.2E+01
Pentachlorophenol	2.4E+00	1.5E+02	2.4E+00	1.1E+02
Pentadiene, 1,3-trans-		4.8E+03		4.7E+03
Pentaerythritol tetranitrate		2.7E+04		2.7E+04
Pentane		4.9E+03		2.6E+03
Pentane, 2-methyl-		4.8E+03		4.7E+03
Pentane, 3-methyl-		4.8E+03		4.7E+03
Pentanediol, 1,5-		3.0E+05		2.7E+05
Pentanol, 1-		2.6E+03		2.5E+03
Pentanol, 4-methyl-2-		1.5E+03		1.2E+03
Pentanone, 2-		2.6E+03		2.2E+03
Pentyne, 1-		4.8E+03		4.7E+03
Perchlorate		5.1E+01		5.1E+01
Perylene		1.3E+03		1.3E+03
Phenacetin	1.8E+03		1.5E+03	
Phenanthrene		1.7E+03		1.7E+03
Phenanthridine		2.0E+02		2.0E+02
Phenol		2.9E+03		1.6E+03
Phenol, 4-tert-butyl-		3.2E+02		3.1E+02
Phenothiazine		6.3E+01		6.2E+01
Phenyl mercuric acetate		5.3E+00		5.3E+00
Phenylene diamine, m-		1.3E+01		7.0E+00
Phenylene diamine, p-		1.5E+01		7.6E+00
Phorate		1.0E+01		8.4E+00
Phosalone		1.3E+02		1.3E+02
Phosdrin (mevinphos)		1.7E+00		1.7E+00
Phosmet		6.8E+02		4.6E+02
Phosphine		3.8E+00		2.1E+00
Phosphorotrithioic acid, S,S,S-tributyl ester	6.6E+01	7.8E+01	6.6E+01	7.8E+01
Phosphorus, total*				
Phosphorus, white		7.5E-01		5.1E-01
Phthalic anhydride		3.6E+04		2.1E+04
Picloram		4.7E+03		4.7E+03
Picoline, 2- (2-methylpyridine)		1.7E+01		8.7E+00
Polybrominated biphenyls (PBBs)	9.7E-03	1.6E-02	9.7E-03	1.6E-02
Polychlorinated biphenyls (PCBs)	1.8E+00	1.1E+00	1.7E+00	1.1E+00

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Potassium*				
Primene		3.0E+02		2.6E+02
Prometon (pramitol)		1.0E+03		1.0E+03
Pronamide		5.0E+03		5.0E+03
Propanal (propionaldehyde)		1.0E+02		5.8E+01
Propane, 1-bromo-		6.1E+02		3.5E+02
Propanil		3.3E+02		3.3E+02
Propanoic acid (propionic acid)		1.1E+02		5.8E+01
Propanol, 1-		9.4E+03		6.7E+03
Propargite		1.3E+03		1.3E+03
Propargyl alcohol		1.1E+02		7.9E+01
Propazine	1.1E+02	1.3E+03	1.1E+02	1.3E+03
Propham		1.3E+03		1.3E+03
Propionitrile (propane nitrile)		2.9E+01		2.7E+01
Propyl acetate, n-		7.4E+03		7.4E+03
Propylbenzene, n-		2.2E+03		1.6E+03
Propylene glycol		1.9E+04		9.9E+03
Propylene glycol monomethyl		4.6E+04		3.9E+04
Propylene oxide	2.0E+01	4.6E+02	1.7E+01	2.4E+02
Propylene tetramer		4.6E+03		3.6E+03
Prothiofos (Tokuthion)		6.6E+00		6.6E+00
Pyrene		1.7E+03		1.7E+03
Pyridine		6.0E+01		4.8E+01
Quinoline	1.6E+00	3.0E+02	1.6E+00	1.6E+02
Ronnel		2.3E+03		2.3E+03
Safrole	1.6E+01		1.3E+01	
Selenium		3.1E+02		3.1E+02
Selenourea		4.1E+02		4.1E+02
Silver		9.6E+01		9.5E+01
Simazine	3.9E+01	3.3E+02	3.9E+01	3.3E+02
Sodium*				
Sodium diethyldithiocarbamate	2.2E+01	2.5E+03	2.2E+01	2.5E+03
Sodium hypochlorite		1.5E+04		1.5E+04
Sodium polyacrylate		1.2E+02		6.2E+01
Strontium		4.4E+04		4.4E+04
Strychnine		2.0E+01		2.0E+01
Styrene		6.7E+03		4.3E+03
Sulfate*				
Sulfide*				
Sulfolane		1.3E+00		1.3E+00
Sulfur*				
Sulprofos (Bolstar)		1.9E+02		1.9E+02
TCDD, 2,3,7,8- (dioxin)		1.0E-03		1.0E-03
Tebuconazole		2.0E+03		2.0E+03
Tebuthiuron		4.7E+03		4.7E+03
Terbufos		1.7E+00		1.7E+00
Tert-amyl ethyl ether (TAEE)		8.9E+02		5.3E+02
Tert-amyl-methyl ether (TAME)		8.9E+02		5.3E+02

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

Chemical of Concern	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Tert-butyl alcohol (2-methyl-2-propanol)		4.7E+03		3.5E+03
Tetrachlorobenzene, 1,2,3,4-		2.0E+01		2.0E+01
Tetrachlorobenzene, 1,2,3,5-		1.3E+01		1.3E+01
Tetrachlorobenzene, 1,2,4,5-		2.0E+01		2.0E+01
Tetrachloroethane, 1,1,1,2-	6.5E+01	2.5E+03	3.9E+01	2.5E+03
Tetrachloroethane, 1,1,2,2-	6.9E+00	3.3E+02	4.0E+00	3.3E+02
Tetrachloroethylene	1.0E+02	7.2E+02	9.4E+01	6.4E+02
Tetrachlorophenol, 2,3,4,5-		3.8E+02		3.6E+02
Tetrachlorophenol, 2,3,4,6-		1.7E+02		1.6E+02
Tetrachlorophenol, 2,3,5,6-		2.1E+01		1.9E+01
Tetrachlorvinphos (Stirophos)		2.6E+03		2.5E+03
Tetradifon		1.0E+03		1.0E+03
Tetraethyl dithiopyrophosphate (sulfotep)		2.8E+01		2.5E+01
Tetraethyl lead		6.6E-03		6.6E-03
Tetraethyl pyrophosphate (TEPP)		7.3E-01		7.2E-01
Tetraethylene glycol		1.6E+03		8.8E+02
Tetrahydrofuran	1.5E+02	3.6E+03	8.6E+01	2.1E+03
Tetrahydropyran	1.6E+02	1.6E+04	9.2E+01	1.6E+04
Tetraoxadodecane, 2,5,8,11-		1.7E+03		1.4E+03
Thallium and compounds (as thallium chloride)		6.3E+00		6.3E+00
Thiofanox		1.9E+01		1.8E+01
Thionazin		4.7E+00		4.7E+00
Thiophanate-methyl		5.3E+03		5.3E+03
Thiram		2.6E+02		2.2E+02
Tin		3.5E+04		3.5E+04
Titanium		2.2E+07		2.2E+07
Toluene		5.9E+03		5.4E+03
Toluene diisocyanate, 2,4/2,6-		1.5E+02		7.5E+01
Toluenediamine, 2,4-	1.5E+00	7.8E+03	1.5E+00	4.0E+03
Toluenediamine, 2,6-		2.0E+03		2.0E+03
Toluidine, o-	1.7E+01		1.5E+01	
Toluidine, p-	2.5E+01		2.5E+01	
Toxaphene	1.2E+00		1.2E+00	
TPH, TX1005, C6-C12		1.6E+03		1.1E+03
TPH, TX1005, >C12-C28		2.3E+03		2.0E+03
TPH, TX1005, >C12-C35		2.3E+03		2.0E+03
TPH, TX1005, >C28-C35		2.3E+03		2.0E+03
TP Silvex, 2,4,5-		5.2E+02		5.1E+02
Triademenol		2.0E+03		2.0E+03
Triallate		3.2E+02		3.2E+02
Triaminotrinitrobenzene (TATB)	1.6E+02	1.3E+02	1.6E+02	9.9E+01
Tributyltin oxide		7.4E-01		3.9E-01
Trichloro-1,2,2-trifluoroethane, 1,1,2-		3.9E+05		2.2E+05
Trichlorobenzene, 1,2,3-		1.9E+02		1.9E+02
Trichlorobenzene, 1,2,4-		6.4E+02		6.1E+02

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Trichlorobenzene, 1,3,5-		1.9E+02		1.7E+02
Trichloroethane, 1,1,1-		5.2E+04		3.2E+04
Trichloroethane, 1,1,2-	1.8E+01	3.3E+02	1.0E+01	3.3E+02
Trichloroethylene	1.3E+02	1.2E+02	7.7E+01	6.8E+01
Trichlorofluoromethane		1.6E+04		1.2E+04
Trichloronate		1.4E+02		1.4E+02
Trichlorophenol, 2,3,4-		5.8E+03		5.2E+03
Trichlorophenol, 2,3,5-		5.4E+03		4.6E+03
Trichlorophenol, 2,3,6-		4.3E+02		3.7E+02
Trichlorophenol, 2,4,5-		5.1E+03		4.1E+03
Trichlorophenol, 2,4,6-	3.5E+02	6.7E+01	3.0E+02	6.7E+01
Trichlorophenol, 3,4,5-		6.3E+03		6.0E+03
Trichlorophenoxyacetic acid,		5.6E+02		4.8E+02
Trichloropropane, 1,1,2-		2.8E+02		2.2E+02
Trichloropropane, 1,2,3-	8.7E-01	4.2E+02	8.7E-01	3.7E+02
Triethanolamine		7.3E+02		3.8E+02
Triethylamine		1.1E+02		5.5E+01
Triethylene glycol		2.0E+05		2.0E+05
Triethylphosphorothioate, O, O,		5.5E-01		5.5E-01
Trifluralin	2.7E+02	3.0E+02	2.7E+02	2.9E+02
Trimethylamine		1.5E+02		7.6E+01
Trimethylbenzene, 1,2,3-		1.2E+02		6.1E+01
Trimethylbenzene, 1,2,4-		1.3E+02		7.3E+01
Trimethylbenzene, 1,3,5-		1.1E+02		5.9E+01
Trinitrobenzene, 1,3,5-		2.0E+03		2.0E+03
Trinitrophenylmethylnitramine (tetryl; nitramine)		5.9E+01		3.4E+01
Trinitrotoluene, 2,4,6-	1.6E+02	2.3E+01	1.6E+02	1.7E+01
Uranium (soluble salts)		2.2E+02		2.2E+02
Valeric acid (pentanoic acid)		1.3E+02		6.8E+01
Vanadium		2.9E+02		2.9E+02
Vernam		6.7E+01		6.7E+01
Vinyl acetate		3.0E+03		1.5E+03
Vinyl chloride	3.7E+00	1.9E+02	3.4E+00	1.6E+02
Vinylcyclohexane		1.5E+02		7.9E+01
Warfarin		1.8E+01		1.6E+01
Xylene, m-		8.9E+03		4.7E+03
Xylene, o-		4.8E+04		2.9E+04
Xylene, p-		8.9E+03		4.7E+03
Xylenes		6.0E+03		3.7E+03
Zinc		9.9E+03		9.9E+03
6 C aliphatics (TPH)	---	1.9E+03	---	1.2E+03
>6-8 C aliphatics (TPH)	---	1.9E+03	---	1.2E+03
>8-10 C aliphatics (TPH)	---	2.2E+03	---	1.3E+03
>10-12 C aliphatics (TPH)	---	2.1E+03	---	1.3E+03
>12-16 C aliphatics (TPH)	---	2.8E+03	---	1.8E+03
>16-21 C aliphatics (TPH)	---	1.3E+05	---	1.3E+05

Texas Commission on Environmental Quality - Table 4
Combined Tier 1 Soil PCLs
Residential

Last Revision March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, dermal, and vegetable consumption pathways)			
	0.5 acre source area		**30 acre source area**	
Chemical of Concern	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**
>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	---	1.3E+05	---	1.1E+05
>7-8 C aromatics (TPH)	---	4.8E+03	---	3.7E+03
>8-10 C aromatics (TPH)	---	1.6E+03	---	1.1E+03
>10-12 C aromatics (TPH)	---	1.9E+03	---	1.5E+03
>12-16 C aromatics (TPH)	---	2.3E+03	---	2.0E+03
>16-21 C aromatics (TPH)	---	1.9E+03	---	1.9E+03
>21-35 C aromatics (TPH)	---	1.9E+03	---	1.9E+03

Footnotes

[1]Note that much higher PCLs for mercury may be obtained using a pH-dependent Kd based on site-specific information (see Figure:30 TAC §350.73(e)(1)(C)).

These compounds, acetic acid, ammonium polyphosphate, ammonium salts, calcium, chloride, ethylene, hydrogen chloride (hydrochloric acid), iron, limonene, d-, magnesium, phosphorus, total, potassium, sodium, sulfate, sulfide, and sulfure, are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tceq.state.tx.us/remediation/trrp/trrp.html.

All values capped at 1E+06

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Acenaphthene		3.7E+04		3.7E+04
Acenaphthylene		3.7E+04		3.7E+04
Acetaldehyde	2.9E+02	2.0E+02	1.5E+02	1.0E+02
Acetate, 2-ethoxyethanol		3.1E+03		1.8E+03
Acetate, isoamyl		7.1E+03		3.8E+03
Acetate, isobutyl		8.5E+03		4.8E+03
Acetate, sec-butyl		1.4E+04		8.6E+03
Acetic acid*				
Acetone (2-propanone)		1.6E+04		8.1E+03
Acetone cyanohydrin		1.5E+03		1.2E+03
Acetonitrile		1.7E+03		9.1E+02
Acetophenone		6.1E+03		3.3E+03
Acetylaminofluorene, 2-	4.3E+00		3.8E+00	
Acifluorfen, sodium		4.5E+03		3.1E+03
Acridine		2.0E+03		2.0E+03
Acrolein		1.6E+00		8.1E-01
Acrylamide	1.9E+00	1.4E+02	1.3E+00	1.4E+02
Acrylic acid		1.7E+02		8.7E+01
Acrylonitrile	7.6E+00	4.1E+01	4.2E+00	2.2E+01
Adipic acid (hexanedioic acid)		1.1E+03		5.4E+02
Alachlor	2.4E+02	6.8E+03	2.4E+02	6.8E+03
Aldicarb		6.8E+02		6.8E+02
Aldicarb sulfone		6.8E+02		6.8E+02
Aldrin	1.0E+00	2.0E+01	9.7E-01	2.0E+01
Allyl alcohol		2.4E+01		1.2E+01
Allyl chloride		2.1E+01		1.1E+01
Aluminum		6.2E+05		5.7E+05
Ametryn		6.1E+03		6.1E+03
Amino-2,6-dinitrotoluene, 4-	1.9E+03	5.9E+01	1.9E+03	4.0E+01
Amino-4,6-dinitrotoluene, 2-	1.9E+03	6.5E+01	1.9E+03	4.6E+01
Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	3.1E+00		3.1E+00	
Aminopyridine, 4-		1.1E+01		8.6E+00
Ammonia		2.1E+03		1.1E+03
Ammonium polyphosphate*				
Ammonium salts*				
Aniline	3.3E+03	1.8E+02	3.3E+03	9.3E+01
Anthracene		1.9E+05		1.9E+05
Anthraquinone, 9,10-		1.4E+04		1.4E+04
Antimony		3.1E+02		3.1E+02
Aramite	7.6E+02	3.4E+04	7.6E+02	3.4E+04
Arsenic	2.0E+02	3.3E+02	2.0E+02	3.3E+02
Arsine		1.1E+00		5.5E-01
Asbestos	4.9E+03		2.5E+03	
Atrazine	8.6E+01	4.0E+03	8.6E+01	2.2E+03
Azinphos-methyl (guthion)		1.0E+03		1.0E+03
Azobenzene	1.6E+02		1.5E+02	

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		**30 acre source area**	
Chemical of Concern	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**
Barium		1.0E+05		8.9E+04
Bayleton		2.0E+04		2.0E+04
Benefin (benfluralin)		2.0E+05		2.0E+05
Benomyl		3.4E+04		3.4E+04
Benz-a-anthracene	2.4E+01		2.4E+01	
Benzaldehyde		6.7E+02		3.4E+02
Benzene	1.8E+02	2.4E+03	1.1E+02	1.8E+03
Benzenedicarbonitrile, 1,3-		4.1E+03		4.1E+03
Benzenedicarboxylic acid, 1,2-disodecyl ester		4.1E+04		4.0E+04
Benzenethiol		5.2E+00		3.6E+00
Benzidine	4.7E-02	2.0E+03	3.3E-02	2.0E+03
Benzo-a-pyrene	2.4E+00		2.4E+00	
Benzo-b-fluoranthene	2.4E+01		2.4E+01	
Benzo-e-pyrene		1.9E+04		1.9E+04
Benzo-g,h,i-perylene		1.9E+04		1.9E+04
Benzoic acid		9.6E+02		5.0E+02
Benzo-j-fluoranthene	2.4E+01		2.4E+01	
Benzo-k-fluoranthene	2.4E+02		2.4E+02	
Benzophenone		4.6E+03		4.6E+03
Benzotrichloride	1.5E+00	9.6E+01	1.5E+00	4.9E+01
Benzoyl peroxide		8.4E+03		4.9E+03
Benzyl alcohol		1.2E+04		6.3E+03
Benzyl chloride	1.7E+02	4.2E+01	1.7E+02	2.2E+01
Benzyl dichloride	1.1E+02	1.5E+02	1.1E+02	8.0E+01
Beryllium	1.6E+04	2.5E+02	8.1E+03	2.5E+02
Biphenyl, 1,1-		3.7E+02		1.9E+02
Biphenyl, 1,1'-, 2-phenoxy-		5.1E+04		5.1E+04
Biquinoline, 2,2'-		2.0E+03		2.0E+03
Bis (2-chloroethoxy) methane	9.1E+00	2.0E+03	6.2E+00	2.0E+03
Bis (2-chloroethyl) ether	4.9E+00		2.8E+00	
Bis (2-chloroisopropyl) ether	1.5E+02	2.7E+04	1.1E+02	2.7E+04
Bis (2-chloromethyl) ether	9.0E-03		4.8E-03	
Bis (2-ethyl-hexyl) phthalate	5.6E+02	5.6E+03	5.6E+02	5.6E+03
Bismuth		4.1E+05		4.1E+05
Bisphenol A		2.7E+04		2.3E+04
Boron		1.9E+05		1.9E+05
Bromacil		6.8E+04		6.8E+04
Bromo-2-chloroethane, 1-		1.0E+03		5.5E+02
Bromobenzene		2.2E+02		1.2E+02
Bromodichloromethane	4.6E+02	2.0E+04	4.6E+02	2.0E+04
Bromoform	1.0E+03	2.0E+04	6.0E+02	2.0E+04
Bromomethane		1.0E+02		5.3E+01
Bromophenyl phenylether, 4-	1.2E+00		1.1E+00	
Butadiene, 1,3-	1.2E+03	7.1E+02	6.2E+02	3.6E+02
Butadiene, 2-methyl-1,3- (isoprene)		5.3E+04		4.7E+04
Butanal (butyraldehyde)		1.3E+04		7.7E+03

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Butane, 2,3-dimethyl-		5.3E+04		4.7E+04
Butanoic acid (butyric acid)		1.8E+02		9.3E+01
Butanol, 2-		1.6E+04		9.2E+03
Butanol, 2-methyl-2-		8.3E+03		7.0E+03
Butanol, n-		5.8E+03		3.1E+03
Butene, 1-		5.3E+04		4.7E+04
Butene, cis-2-		5.3E+04		4.7E+04
Butene, trans-2-		5.3E+04		4.7E+04
Butoxy ethanol, 2- (Ethylene glycol monobutyl ether; EGBE)		3.1E+05		2.8E+05
Butyl acetate		1.7E+03		8.9E+02
Butyl acrylate		1.8E+02		9.4E+01
Butyl benzyl phthalate	1.0E+04	2.8E+04	1.0E+04	1.6E+04
Butyl ether, n- (dibutyl ether)		3.1E+03		1.6E+03
Butyl methacrylate		2.6E+04		1.6E+04
Butylate		3.4E+04		3.4E+04
Butylbenzene, n-		6.9E+03		4.0E+03
Butylbenzene, sec-		6.7E+03		3.7E+03
Butylbenzene, tert-		5.7E+03		3.2E+03
Cacodylic acid		2.0E+03		2.0E+03
Cadmium	2.1E+04	8.5E+02	1.1E+04	8.5E+02
Calcium*				
Caprolactam		4.6E+02		2.3E+02
Captan	5.5E+03	1.3E+04	5.5E+03	7.5E+03
Carbaryl		5.2E+03		2.8E+03
Carbazole	9.5E+02		9.5E+02	
Carbofuran		4.6E+01		2.4E+01
Carbon disulfide		1.3E+04		7.2E+03
Carbon tetrachloride	3.4E+01	4.1E+01	1.9E+01	2.1E+01
Carbophenothion		8.9E+03		8.9E+03
Carbosulfan		6.8E+03		6.8E+03
Carboxin		6.8E+04		6.8E+04
Chloral		1.0E+03		5.4E+02
Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)		1.2E+03		6.0E+02
Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)		1.0E+04		1.0E+04
Chlordane (technical)	6.6E+01	3.9E+02	6.4E+01	3.7E+02
Chlordane, cis- (alpha chlordane)	5.4E+01	3.3E+02	5.4E+01	3.3E+02
Chlordane, gamma	5.3E+01	3.1E+02	5.1E+01	2.9E+02
Chlorfenvinphos		3.9E+01		2.1E+01
Chloride*				
Chlorine		3.2E+01		1.7E+01
Chloro-1,3-butadiene, 2-		1.5E+02		7.7E+01
Chloro-2-propanol, 1-		2.0E+04		2.0E+04
Chloro-3-methylphenol, 4-		3.2E+03		3.0E+03
Chloroaniline, p-	9.5E+01	1.2E+03	9.5E+01	7.5E+02

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Chlorobenzene		1.0E+03		5.4E+02
Chlorobenzilate	6.3E+01	1.4E+04	5.7E+01	1.4E+04
Chlorobromomethane (bromochloromethane)		1.0E+03		5.5E+02
Chlorodifluoromethane		1.1E+06		5.5E+05
Chloroethane (ethyl chloride)		1.4E+05		8.7E+04
Chloroethanol, 2-		4.8E+02		2.5E+02
Chloroethoxy ethene, 2- (2-chloroethylvinylether)	2.6E+01	6.4E+00	2.6E+01	3.3E+00
Chloroform	2.6E+01	1.7E+03	1.3E+01	9.7E+02
Chlorohexane, 1-		1.4E+04		8.7E+03
Chloromethane (methyl chloride)	2.9E+02	1.9E+03	1.6E+02	9.9E+02
Chloronaphthalene, 1- (Chloronaphthalene, alpha-)		5.0E+04		5.0E+04
Chloronaphthalene, 2- (chloronaphthalene, beta)		5.0E+04		5.0E+04
Chloronitrobenzene, p- (1-chloro-4-nitrobenzene)	3.0E+03	7.8E+01	3.0E+03	4.2E+01
Chlorophenol, 2-		3.2E+03		2.4E+03
Chlorophenol, 3-		2.9E+03		2.5E+03
Chlorophenol, 4-		2.9E+03		2.5E+03
Chlorophenyl phenylether, 4-	9.8E-01		8.0E-01	
Chloropropane, 2-		2.0E+03		1.1E+03
Chlorothalonil	1.7E+03	1.0E+04	1.7E+03	1.0E+04
Chlorotoluene, o- (2-chlorotoluene)		4.2E+03		2.5E+03
Chlorotoluene, p- (4-chlorotoluene)		6.7E+00		3.5E+00
Chlorpyrifos		3.9E+02		2.2E+02
Chromium (III)		9.5E+04		5.7E+04
Chromium (total)		9.5E+04		5.7E+04
Chromium (VI)	3.2E+03	1.0E+03	1.6E+03	1.0E+03
Chrysene	2.4E+03		2.4E+03	
Cobalt	4.2E+03	2.8E+02	2.2E+03	2.7E+02
Copolymer acrylamide		4.8E+00		2.5E+00
Copper		3.8E+04		3.7E+04
Coronene		1.4E+03		1.4E+03
Coumaphos		4.8E+03		4.8E+03
Cresol		3.7E+03		2.0E+03
Cresol, m- (3-methylphenol)		3.7E+03		2.0E+03
Cresol, o- (2-methylphenol)		3.5E+03		1.9E+03
Cresol, p- (4-methylphenol)		1.8E+03		1.3E+03
Crotonaldehyde	1.5E+01	2.7E+02	1.5E+01	1.4E+02
Cumene (isopropylbenzene)		1.1E+04		6.3E+03
Cyanazine	2.3E+01	1.4E+03	2.3E+01	1.4E+03
Cyanide		1.9E+04		1.9E+04
Cyanogen		4.5E+02		2.3E+02
Cycloate		3.7E+04		3.7E+04
Cyclohexane		1.3E+05		6.5E+04

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Cyclohexanol		4.3E+04		2.2E+04
Cyclohexanone		7.0E+03		3.6E+03
Cyclohexene-1-methanol, 3-		2.0E+04		2.0E+04
Cyclopentane, methyl-		1.8E+04		1.0E+04
Cyclotetramethylenetetranitramine (HMX)		6.0E+02		3.2E+02
Cyclotrimethylenetrinitramine	1.7E+02	7.6E+01	1.7E+02	4.0E+01
Cymene (isopropyltoluene)		8.8E+03		4.7E+03
Cymoxanil		8.9E+03		8.9E+03
Dacthal (DCPA)		6.8E+03		6.8E+03
Dalapon, sodium salt (2,2-dichloropropanoic acid)		2.0E+04		2.0E+04
DDD	1.0E+02		1.0E+02	
DDE	7.3E+01		7.3E+01	
DDT	7.1E+01	4.4E+02	6.8E+01	4.4E+02
Demeton		2.7E+01		2.7E+01
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)		2.7E+04		2.7E+04
Diallate	3.1E+02		3.1E+02	
Diazinon		7.9E+01		4.3E+01
Dibenz(a,h)acridine	1.6E+01		1.6E+01	
Dibenz(a,j)acridine	2.4E+01		2.4E+01	
Dibenz-a,h-anthracene	2.4E+00		2.4E+00	
Dibenzo(a,e)pyrene	2.6E+00		2.6E+00	
Dibenzo(a,h)pyrene	2.6E-01		2.6E-01	
Dibenzo(a,i)pyrene	2.6E-01		2.6E-01	
Dibenzofuran		2.7E+03		2.7E+03
Dibenzothiophene		2.0E+03		2.0E+03
Dibromo-3-chloropropane, 1,2-	2.6E-01	1.0E+01	1.4E-01	5.6E+00
Dibromochloromethane (chlorodibromomethane)	3.4E+02	2.0E+04	3.4E+02	2.0E+04
Dibromofluoromethane		7.0E+04		4.4E+04
Dicamba		2.2E+03		1.2E+03
Dichlormid		1.7E+04		1.7E+04
Dichloro-2-butene, 1,4-	3.3E-01		1.7E-01	
Dichloro-2-butene, 1,4- trans	3.4E-01		1.8E-01	
Dichlorobenzene, 1,2-		1.1E+03		5.7E+02
Dichlorobenzene, 1,3-		1.7E+02		8.8E+01
Dichlorobenzene, 1,4-	1.2E+03	3.4E+03	1.2E+03	1.8E+03
Dichlorobenzidine, 3,3-	4.2E+01		4.2E+01	
Dichlorobutane, 2,3-		1.5E+02		7.7E+01
Dichlorodifluoromethane		7.0E+04		4.3E+04
Dichloroethane, 1,1-		8.2E+03		4.3E+03
Dichloroethane, 1,2-	2.2E+01	1.5E+04	1.1E+01	1.2E+04
Dichloroethylene, 1,1-		6.4E+03		3.5E+03
Dichloroethylene, cis-1,2-		6.4E+03		4.7E+03
Dichloroethylene, trans-1,2		1.2E+03		6.4E+02

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Dichlorofluoromethane		9.0E+02		4.6E+02
Dichlorophenol, 2,3-		1.9E+03		1.8E+03
Dichlorophenol, 2,4-		1.8E+03		1.7E+03
Dichlorophenol, 2,5-		1.9E+03		1.8E+03
Dichlorophenol, 2,6-		6.1E+02		5.5E+02
Dichlorophenol, 3,4-		2.0E+03		1.9E+03
Dichlorophenol, 3,5-		2.0E+03		1.9E+03
Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)		5.5E+03		5.5E+03
Dichlorophenoxyacetic acid, 2,4- (2,4-D)		1.6E+03		9.2E+02
Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)		6.8E+03		6.8E+03
Dichloropropane, 1,2-	4.2E+02	8.6E+01	4.2E+02	4.4E+01
Dichloropropane, 1,3-	9.9E+01	4.2E+02	6.1E+01	2.2E+02
Dichloropropane, 2,2-	4.2E+02	8.6E+01	4.2E+02	4.4E+01
Dichloropropanol, 2,3-		2.0E+03		2.0E+03
Dichloropropene, 1,1-	9.9E+01	4.2E+02	6.1E+01	2.2E+02
Dichloropropene, 1,3- (mixed isomers)	9.9E+01	4.2E+02	6.1E+01	2.2E+02
Dichloropropene, cis 1,3-	5.3E+01	6.0E+01	5.3E+01	4.3E+01
Dichloropropene, trans 1,3-	9.9E+01	4.2E+02	6.1E+01	2.2E+02
Dichlorvos	6.6E+01	3.4E+02	6.6E+01	3.4E+02
Dicrotophos (bidrin)		6.8E+01		6.8E+01
Dicyclopentadiene		8.2E+03		8.2E+03
Dieldrin	1.2E+00	3.4E+01	1.1E+00	3.4E+01
Diethanolamine		1.8E+02		1.3E+02
Diethyl phthalate		4.0E+03		2.0E+03
Diethylene glycol		1.4E+06		1.4E+06
Diethylene glycol monobutyl ether		3.1E+03		2.0E+03
Diethylhexyl adipate	1.6E+04	4.0E+04	1.6E+04	2.2E+04
Diethylstilbestrol	4.1E-03		4.1E-03	
Diisobutylene (trimethyl-1-pentene, 2,4,4-)		4.0E+03		2.1E+03
Diisopropylbenzene, p-		4.0E+03		2.5E+03
Diisopropyl ether (2,2'-oxybis-propane)		7.9E+03		4.2E+03
Dimethenamid		1.0E+04		1.0E+04
Dimethoate		1.4E+02		1.4E+02
Dimethoxybenzidine, 3,3'-	1.4E+03		1.4E+03	
Dimethylphenethylamine, alpha, alpha-		1.4E+03		1.4E+03
Dimethyl phenol, 2,4-		4.7E+03		2.9E+03
Dimethylaminoazobenzene, p-		6.8E+00		6.8E+00
Dimethylbenz-a-anthracene, 7,12-	6.9E-02		6.9E-02	
Dimethylbenzidine, 3,3'-	1.7E+00		1.7E+00	
Dimethylnaphthalene, 1,3-		2.5E+04		2.5E+04

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Dimethylphthalate		1.8E+03		9.3E+02
Di-n-butyl phthalate		2.6E+04		1.6E+04
Dinitro-2-methylphenol, 4,6-(dinitro-o-cresol, 4, 6-)		3.4E+01		2.3E+01
Dinitrobenzene, 1,3-(dinitrobenzene, 2,4-)		5.7E+01		4.9E+01
Dinitrobenzene, 1,4-		5.8E+01		5.0E+01
Dinitrophenol, 2,4-		1.4E+03		1.4E+03
Dinitrophenol, 2,5-		1.4E+03		1.4E+03
Dinitrotoluene, 2,4-	2.8E+01	4.0E+01	2.8E+01	2.1E+01
Dinitrotoluene, 2,6-	2.8E+01	5.5E+01	2.8E+01	3.0E+01
Di-n-octyl phthalate		1.3E+04		1.3E+04
Dinoseb		6.8E+02		6.8E+02
Dioxane 1,4-	2.6E+03	4.6E+03	2.6E+03	2.4E+03
Diphenyl ether		1.8E+03		1.1E+03
Diphenylamine		4.1E+03		2.4E+03
Diphenylhydrazine, 1,2-	2.2E+01		2.0E+01	
Dipropylene glycol		2.1E+04		1.2E+04
Diquat		1.0E+02		5.3E+01
Disodium iminodiacetate (iminodiacetic acid, disodium salt)		6.8E+03		6.8E+03
Disodium iminodiacetate (iminodiacetic acid, disodium salt)		6.8E+03		6.8E+03
Disulfoton		2.4E+01		2.2E+01
Diuron		1.3E+03		1.2E+03
Dodecylphenol, 4-		3.4E+04		3.4E+04
Dodecylphenol, 4-		3.4E+04		3.4E+04
Endosulfan		1.1E+02		5.6E+01
Endosulfan I		2.2E+02		1.2E+02
Endosulfan II		4.1E+03		4.1E+03
Endosulfan sulfate		4.1E+03		4.1E+03
Endothall		1.4E+04		1.4E+04
Endrin		1.6E+02		1.3E+02
Endrin aldehyde		2.0E+02		2.0E+02
Endrin ketone		1.9E+02		1.8E+02
Endrin ketone		1.9E+02		1.8E+02
Epichlorohydrin	6.6E+02	3.7E+01	3.8E+02	1.9E+01
EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioat		6.8E+00		6.8E+00
Esfenvalerate		1.4E+03		1.4E+03
Ethalfluralin (sonolan)	2.1E+02	2.7E+04	2.1E+02	2.7E+04
Ethanol		1.2E+05		6.3E+04
Ethanol, 2-amino-		7.6E+02		4.9E+02
Ethanol, 2-(2-aminoethoxy)-		4.8E+02		4.5E+02
Ethanol, 2-(2-ethoxyethoxy)-		2.0E+06		2.0E+06
Ethion		3.1E+02		2.8E+02
Ethoprop	6.8E+02	6.8E+01	6.8E+02	6.8E+01

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Ethoxy ethanol, 2-		4.3E+03		2.2E+03
Ethyl acetate		3.1E+04		1.6E+04
Ethyl acrylate	6.0E+02	6.8E+02	6.0E+02	3.5E+02
Ethyl benzene		1.8E+04		1.0E+04
Ethyl dipropylthiocarbamate, S-		1.7E+04		1.7E+04
Ethyl ether		2.3E+04		1.3E+04
Ethyl methacrylate		1.4E+04		7.8E+03
Ethyl methanesulfonate	9.8E+01		6.7E+01	
Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)		8.8E+02		7.8E+02
Ethyl-1-hexanol, 2-		3.5E+04		2.1E+04
Ethyl-2-hexenal, 2-		6.3E+03		3.3E+03
Ethyl-2-methyl benzene, 1-		1.1E+04		5.9E+03
Ethyl-4-methyl benzene, 1-		9.6E+03		5.1E+03
Ethylene*				
Ethylene dibromide (dibromoethane, 1,2-)	1.5E+00	3.0E+02	7.9E-01	1.6E+02
Ethylene glycol		4.3E+03		2.2E+03
Ethylene oxide	5.0E+00		2.8E+00	
Ethylene thiourea	1.7E+02	5.0E+01	1.7E+02	4.7E+01
Ethylenediamine		4.9E+03		2.6E+03
Ethylenimine	1.5E-01		9.0E-02	
Ethylhexyl acrylate, 2-	4.0E+02	3.9E+03	4.0E+02	2.0E+03
Famphur		1.9E+01		1.8E+01
Fensulfothion		6.8E+02		6.8E+02
Fenthion		4.8E+01		4.8E+01
Fluoranthene		2.5E+04		2.5E+04
Fluorene		2.5E+04		2.5E+04
Fluorine (soluble fluoride)		4.8E+04		4.1E+04
Fluorochloridone		3.9E+03		3.2E+03
Fonofos		1.4E+03		1.4E+03
Formaldehyde		1.4E+03		7.1E+02
Formic acid		3.0E+02		1.5E+02
Furan		3.8E+02		2.4E+02
Furfural		6.7E+02		3.8E+02
Glycidylaldehyde		1.4E+02		8.5E+01
Glyphosate		6.8E+04		6.8E+04
Heptachlor	3.3E+00	3.4E+02	2.8E+00	3.4E+02
Heptachlor epoxide	2.0E+00	8.9E+00	1.9E+00	8.9E+00
Heptane, n-		5.3E+04		4.7E+04
Heptanoic acid, n-		1.7E+02		8.8E+01
Hexachlorobenzene	8.7E+00	5.5E+02	6.9E+00	5.5E+02
Hexachlorobutadiene	4.1E+01	6.8E+02	2.3E+01	6.8E+02
Hexachlorocyclohexane, alpha (alpha-BHC)	3.3E+00	6.8E+03	2.9E+00	6.8E+03
Hexachlorocyclohexane, beta (beta-BHC)	1.2E+01		1.1E+01	

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Hexachlorocyclohexane, delta (delta-BHC)	1.2E+01	2.6E+02	1.2E+01	2.6E+02
Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	1.8E+01	1.9E+02	1.8E+01	1.6E+02
Hexachlorocyclohexane, techn (technical-BHC)	1.2E+01		1.1E+01	
Hexachlorocyclopentadiene		2.0E+01		1.0E+01
Hexachloroethane	7.4E+02	6.8E+02	5.2E+02	6.8E+02
Hexachlorophene		2.0E+02		2.0E+02
Hexachloropropylene	7.5E+02	6.8E+02	5.3E+02	6.8E+02
Hexanal, 2-ethyl-		6.4E+03		3.4E+03
Hexane, n-		1.2E+04		6.6E+03
Hexanediamine, 1,6-		5.1E+02		2.8E+02
Hexanediol, 1,6-		2.0E+06		1.4E+06
Hexanoic acid		1.9E+02		9.8E+01
Hexanone, 2-		1.5E+02		7.9E+01
Hexazinone		2.4E+03		1.3E+03
Hexene, 1-		2.7E+03		1.4E+03
Hexylene glycol (2-methyl-2,4-pentanediol)		3.5E+01		1.8E+01
Hydrazine	7.2E-01		3.8E-01	
Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)		2.2E+02		1.2E+02
Hydrogen chloride (hydrochloric acid)*				
Hydroquinone	3.4E+02	2.7E+04	3.4E+02	2.7E+04
Indene		1.6E+02		8.0E+01
Indeno-1,2,3-cd-pyrene	2.4E+01		2.4E+01	
Iron*				
Isoamyl alcohol		4.4E+03		3.9E+03
Isobutyl alcohol		9.9E+03		5.2E+03
Isobutylene (2-methyl-1-propene)		2.4E+06		1.2E+06
Isobutyric acid (2-methylpropanoic acid)		1.6E+02		8.2E+01
Isodecanol		1.1E+03		1.1E+03
Isodrin	1.1E-01	2.0E+00	1.0E-01	2.0E+00
Isophorone	2.0E+04	3.7E+03	2.0E+04	1.9E+03
Isopropyl acetate		7.2E+04		7.2E+04
Isopropyl alcohol		3.8E+04		2.2E+04
Isosafrole	5.5E+01		4.1E+01	
Kelthane (dicofol)		4.1E+03		4.1E+03
Kepone (chlordecone)	2.3E+00	1.4E+02	2.3E+00	1.4E+02
Lead (inorganic)		1.6E+03		1.6E+03
Limonene, d-*				
Lithium		1.9E+03		1.9E+03
Magnesium*				
Malathion		4.6E+03		2.9E+03

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Maleic anhydride		2.9E+02		1.5E+02
Maleic hydrazide		3.2E+04		1.7E+04
Malononitrile		6.6E+01		6.3E+01
Mancozeb		2.0E+04		2.0E+04
Manganese		3.6E+04		2.4E+04
MCPA (4-(chloro-2-methylphenoxy) acetic acid)		3.4E+02		3.4E+02
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.8E+02		6.8E+02
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.8E+02		6.8E+02
MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)		6.8E+02		6.8E+02
Mercuric chloride (pH = 4.9)		6.2E+00		3.3E+00
Mercuric chloride (pH = 6.8)		1.9E+01		1.1E+01
Mercury (pH = 4.9)[1]		6.2E+00		3.3E+00
Merphos		2.0E+01		2.0E+01
Methacrylic acid (2-methyl-2-propenoic acid)		2.8E+03		1.6E+03
Methacrylonitrile		4.3E+01		2.8E+01
Methanol		1.6E+04		8.4E+03
Methapyrilene	4.1E+00	1.3E+02	4.1E+00	6.5E+01
Methomyl		1.9E+03		1.0E+03
Methoxychlor		3.2E+03		3.0E+03
Methoxyethanol, 2-		4.3E+02		2.2E+02
Methyl acetate (acetic acid, methyl ester)		1.3E+04		6.6E+03
Methyl acrylate		1.4E+02		7.5E+01
Methyl amyl ketone (2-heptanone)		3.8E+04		3.1E+04
Methyl chrysene, 1-	2.4E+03		2.4E+03	
Methyl chrysene, 2-	2.4E+03		2.4E+03	
Methyl chrysene, 6-	2.4E+02		2.4E+02	
Methyl cyclohexane		6.4E+04		3.3E+04
Methyl ethyl ketone (2-butanone)		1.3E+05		7.3E+04
Methyl iodide (iodomethane)		2.2E+02		1.2E+02
Methyl isobutyl ketone (4-methyl-2-pentanone)		4.1E+04		2.8E+04
Methyl mercury		9.7E+01		9.6E+01
Methyl methacrylate		1.5E+04		7.7E+03
Methyl methanesulfonate	9.5E+01		6.4E+01	
Methyl parathion		1.1E+02		8.0E+01
Methyl-1-butene, 2-		5.3E+04		4.7E+04
Methyl-1-propanal, 2- (isobutyraldehyde)		5.4E+03		3.0E+03
Methyl-2-butene, 2-		5.3E+04		4.7E+04
Methyl-2-pentenal, 2-	1.5E+01	1.3E+02	1.5E+01	6.8E+01

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	5.8E+02		5.8E+02	
Methylcholanthrene, 3-	7.9E-01		7.9E-01	
Methylene bromide (dibromomethane)	3.8E+03	3.8E+02	3.8E+03	1.9E+02
Methylene chloride (dichloromethane)	9.6E+02	3.1E+04	5.6E+02	2.2E+04
Methylene-bis (2-chloroaniline)	1.8E+02	1.4E+03	1.8E+02	1.4E+03
Methylmecury hydroxide		1.6E+00		8.3E-01
Methylnaphthalene, 1-	6.0E+02	4.3E+04	6.0E+02	4.3E+04
Methylnaphthalene, 2-		2.5E+03		2.5E+03
Methylpyrrolidone, N-		7.4E+03		5.2E+03
Methyltetrahydrofuran, 2-	2.9E+02	2.0E+05	1.6E+02	2.0E+05
Methyltetrahydropyran, 2-	3.3E+02	2.0E+05	1.8E+02	2.0E+05
Metolachlor		1.0E+05		1.0E+05
Metribuzin		1.7E+04		1.7E+04
Mirex		1.4E+02		1.4E+02
Molinate		1.4E+03		1.4E+03
Molybdenum		4.5E+03		4.5E+03
Monocrotophos		5.8E+01		3.2E+01
Morpholine		2.0E+02		1.0E+02
MTBE (methyl tert-butyl ether)	2.0E+03	8.8E+03	1.1E+03	7.8E+03
Naled		2.8E+02		1.6E+02
Naphthalene		3.6E+02		1.9E+02
Naphthoquinone, 1,4-		2.7E+01		1.4E+01
Naphthylamine, 1-		1.4E+04		1.4E+04
Naphthylamine, 2-	1.1E+01		1.1E+01	
Napropamide		6.8E+04		6.8E+04
Neopentyl glycol		2.0E+05		2.0E+05
Nickel and compounds	7.9E+04	8.5E+03	4.1E+04	7.9E+03
Nitrate		1.6E+06		1.6E+06
Nitrite		9.7E+04		9.7E+04
Nitroaniline, 2-		5.0E+01		2.9E+01
Nitroaniline, 3-	5.0E+02	1.8E+02	5.0E+02	1.6E+02
Nitroaniline, 4-	9.5E+02	1.0E+03	9.5E+02	6.6E+02
Nitrobenzene	1.1E+02	7.0E+02	5.7E+01	4.8E+02
Nitroglycerin	1.1E+03	6.8E+01	1.1E+03	6.8E+01
Nitrophenol, 2-		6.2E+02		4.1E+02
Nitrophenol, 3-		8.3E+02		6.0E+02
Nitrophenol, 4-		1.9E+02		1.1E+02
Nitropropane, 2-	2.2E-01	1.1E+02	1.1E-01	8.7E+01
Nitroquinoline-N-oxide, 4-	1.2E+00		9.0E-01	
Nitrosodiethanolamine	6.8E+00		6.8E+00	
Nitrosodiethylamine, n-	7.0E-02		4.4E-02	
Nitrosodimethylamine, n-	2.1E-01	3.6E+00	1.3E-01	2.4E+00
Nitrosodi-n-butylamine, n-	1.2E+00		7.1E-01	
Nitrosodi-n-propylamine, n-	1.4E+00		1.4E+00	

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Nitrosodiphenylamine	1.9E+03		1.9E+03	
Nitroso-methyl-ethyl-amine, n-	1.3E+00		1.3E+00	
Nitrosomorpholine, N-	1.4E+00		9.7E-01	
Nitroso-n-ethylurea, n-	1.4E-01		1.4E-01	
Nitrosopiperidine, N-	1.1E+00		7.4E-01	
Nitrosopyrrolidine, n-	4.7E+00		3.2E+00	
Nitrotoluene, m-		1.0E+03		5.7E+02
Nitrotoluene, o-	8.7E+01	4.2E+02	8.7E+01	3.2E+02
Nitrotoluene, p-	1.2E+03	8.4E+02	1.2E+03	5.1E+02
Nonachlor, cis-	5.3E+01	3.2E+02	5.2E+01	3.0E+02
Nonachlor, trans-	5.3E+01	3.2E+02	5.2E+01	3.0E+02
Nonanal		1.4E+05		1.4E+05
Nonene, 1-n		2.1E+02		1.1E+02
Nonylphenol		6.7E+04		6.5E+04
Nonylphenol		6.7E+04		6.5E+04
Nonylphenol		6.7E+04		6.5E+04
Nonylphenol ethoxylate		9.9E+04		9.6E+04
Octamethylpyrophosphoramide		1.4E+03		1.4E+03
Octanone		5.8E+04		5.6E+04
Oxamyl		1.7E+04		1.7E+04
Oxychlordane	5.3E+01	3.2E+02	5.2E+01	3.0E+02
Paraquat		3.1E+03		3.1E+03
Parathion (ethyl parathion)		2.3E+02		1.2E+02
Pebulate		3.4E+04		3.4E+04
Pendimethalin		2.7E+04		2.7E+04
Pentachlorobenzene		5.4E+02		5.3E+02
Pentachloroethane	1.1E+02	3.1E+04	6.5E+01	3.1E+04
Pentachloronitrobenzene	7.3E+01	2.7E+02	7.3E+01	1.5E+02
Pentachlorophenol	1.1E+02	6.0E+02	1.1E+02	3.2E+02
Pentadiene, 1,3-trans-		5.3E+04		4.7E+04
Pentaerythritol tetranitrate (PETN)		2.7E+05		2.7E+05
Pentane		7.4E+03		3.8E+03
Pentane, 2-methyl-		5.3E+04		4.7E+04
Pentane, 3-methyl-		5.3E+04		4.7E+04
Pentanediol, 1,5-		1.8E+06		1.3E+06
Pentanol, 1-		2.4E+04		1.9E+04
Pentanol, 4-methyl-2-		6.0E+03		3.5E+03
Pentanone, 2-		1.2E+04		7.3E+03
Pentyne, 1-		5.3E+04		4.7E+04
Perchlorate		5.7E+02		5.7E+02
Perylene		1.4E+04		1.4E+04
Phenacetin	5.9E+03		4.5E+03	
Phenanthrene		1.9E+04		1.9E+04
Phenanthridine		2.0E+03		2.0E+03
Phenol		4.6E+03		2.4E+03
Phenol, 4-tert-butyl-		2.7E+03		2.2E+03
Phenothiazine		7.3E+02		7.1E+02

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Phenyl mercuric acetate		5.5E+01		5.5E+01
Phenylene diamine, m-		1.9E+01		1.0E+01
Phenylene diamine, p-		2.1E+01		1.1E+01
Phorate		4.2E+01		2.6E+01
Phosalone		1.4E+03		1.4E+03
Phosdrin (mevinphos)		1.7E+01		1.7E+01
Phosmet		1.7E+03		9.3E+02
Phosphine		6.3E+00		3.3E+00
Phosphorotrithioic acid, S,S,S-tributyl ester	3.4E+02	1.0E+03	3.4E+02	1.0E+03
Phosphorus, total*				
Phosphorus, white		1.9E+00		1.0E+00
Phthalic anhydride		6.6E+04		3.5E+04
Picloram		4.8E+04		4.8E+04
Picoline, 2- (2-methylpyridine)		2.4E+01		1.2E+01
Polybrominated biphenyls (PBBs)	2.1E+00	4.8E+00	2.1E+00	4.8E+00
Polychlorinated biphenyls (PCBs)	7.7E+00	1.2E+01	7.1E+00	1.2E+01
Potassium*				
Primene		1.6E+03		1.0E+03
Prometon (pramitol)		1.0E+04		1.0E+04
Pronamide		5.1E+04		5.1E+04
Propanal (propionaldehyde)		1.7E+02		8.7E+01
Propane, 1-bromo-		1.0E+03		5.4E+02
Propanil		3.4E+03		3.4E+03
Propanoic acid (propionic acid)		1.6E+02		8.2E+01
Propanol, 1-		2.7E+04		1.5E+04
Propargite		1.4E+04		1.4E+04
Propargyl alcohol		3.4E+02		1.9E+02
Propazine	4.3E+02	1.4E+04	4.3E+02	1.4E+04
Propham		1.4E+04		1.4E+04
Propionitrile (propane nitrile)		2.0E+02		1.3E+02
Propyl acetate, n-		9.2E+04		9.2E+04
Propylbenzene, n-		7.3E+03		4.1E+03
Propylene glycol		2.7E+04		1.4E+04
Propylene glycol monomethyl ether		2.2E+05		1.3E+05
Propylene oxide	6.9E+01	6.4E+02	4.9E+01	3.3E+02
Propylene tetramer		1.6E+04		9.5E+03
Prothiofos (Tokuthion)		6.8E+01		6.8E+01
Pyrene		1.9E+04		1.9E+04
Pyridine		2.5E+02		1.4E+02
Quinoline	6.4E+00	4.2E+02	6.4E+00	2.2E+02
Ronnel		3.4E+04		3.4E+04
Safrole	4.9E+01		3.5E+01	
Selenium		4.8E+03		4.7E+03
Selenourea		5.1E+03		5.1E+03
Silver		1.9E+03		1.7E+03
Simazine	1.6E+02	3.4E+03	1.6E+02	3.4E+03

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Sodium*				
Sodium diethyldithiocarbamate	1.1E+02	3.1E+04	1.1E+02	3.0E+04
Sodium hypochlorite		1.6E+05		1.5E+05
Sodium polyacrylate		1.7E+02		8.7E+01
Strontium		4.9E+05		4.9E+05
Strychnine		2.0E+02		2.0E+02
Styrene		1.5E+04		7.8E+03
Sulfate*				
Sulfide*				
Sulfolane		1.4E+01		1.4E+01
Sulfur*				
Sulprofos (Bolstar)		2.0E+03		2.0E+03
TCDD, 2,3,7,8- (dioxin)		5.0E-03		5.0E-03
Tebuconazole		2.0E+04		2.0E+04
Tebuthiuron		4.8E+04		4.8E+04
Terbufos		1.7E+01		1.7E+01
Tert-amyl ethyl ether (TAEE)		1.6E+03		8.7E+02
Tert-amyl-methyl ether (TAME)		1.6E+03		8.7E+02
Tert-butyl alcohol (2-methyl-2-propanol)		1.5E+04		8.7E+03
Tetrachlorobenzene, 1,2,3,4-		2.0E+02		2.0E+02
Tetrachlorobenzene, 1,2,3,5-		2.0E+02		2.0E+02
Tetrachlorobenzene, 1,2,4,5-		2.0E+02		2.0E+02
Tetrachloroethane, 1,1,1,2-	1.3E+02	3.1E+04	7.3E+01	3.1E+04
Tetrachloroethane, 1,1,2,2-	1.4E+01	4.1E+03	7.3E+00	4.1E+03
Tetrachloroethylene	4.1E+02	4.5E+03	3.3E+02	2.9E+03
Tetrachlorophenol, 2,3,4,5-		6.4E+03		3.9E+03
Tetrachlorophenol, 2,3,4,6-		2.5E+03		1.4E+03
Tetrachlorophenol, 2,3,5,6-		2.5E+02		1.3E+02
Tetrachlorvinphos (Stirophos)		2.5E+04		2.2E+04
Tetradifon		1.4E+04		1.4E+04
Tetraethyl dithiopyrophosphate (sulfotep)		1.5E+02		9.9E+01
Tetraethyl lead		6.6E-02		6.5E-02
Tetraethyl pyrophosphate (TEPP)		7.0E+00		6.6E+00
Tetraethylene glycol		2.5E+03		1.3E+03
Tetrahydrofuran	2.9E+02	6.3E+03	1.6E+02	3.3E+03
Tetrahydropyran	3.1E+02	2.0E+05	1.7E+02	2.0E+05
Tetraoxadodecane, 2,5,8,11-		8.5E+03		5.2E+03
Thallium and compounds (as thallium chloride)		7.8E+01		7.8E+01
Thiofanox		1.4E+02		1.1E+02
Thionazin		4.8E+01		4.8E+01
Thiophanate-methyl		5.5E+04		5.5E+04
Thiram		1.2E+03		7.2E+02
Tin		4.0E+05		4.0E+05
Titanium		1.9E+08		1.9E+08

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		30 acre source area	
Chemical of Concern	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Toluene		4.2E+04		2.9E+04
Toluene diisocyanate, 2,4/2,6-		2.0E+02		1.0E+02
Toluenediamine, 2,4-	6.0E+00	1.1E+04	6.0E+00	5.6E+03
Toluenediamine, 2,6-		2.0E+04		2.0E+04
Toluidine, o-	5.9E+01		4.8E+01	
Toluidine, p-	1.0E+02		1.0E+02	
Toxaphene	1.7E+01		1.7E+01	
TPH, TX1005, C6-C12		3.9E+03		2.1E+03
TPH, TX1005, >C12-C28		1.2E+04		7.8E+03
TPH, TX1005, >C12-C35		1.2E+04		7.8E+03
TPH, TX1005, >C28-C35		1.2E+04		7.8E+03
TP Silvex, 2,4,5-		4.7E+03		4.2E+03
Triademenol		2.0E+04		2.0E+04
Triallate		8.9E+03		8.9E+03
Triaminotrinitrobenzene (TATB)	6.4E+02	4.3E+02	6.4E+02	2.4E+02
Tributyltin oxide		1.1E+00		5.5E-01
Trichloro-1,2,2-trifluoroethane, 1,1,2-		6.3E+05		3.3E+05
Trichlorobenzene, 1,2,3-		1.6E+03		1.4E+03
Trichlorobenzene, 1,2,4-		5.2E+03		4.2E+03
Trichlorobenzene, 1,3,5-		1.3E+03		9.6E+02
Trichloroethane, 1,1,1-		1.0E+05		5.4E+04
Trichloroethane, 1,1,2-	3.5E+01	4.1E+03	1.9E+01	4.1E+03
Trichloroethylene	2.6E+02	2.1E+02	1.4E+02	1.1E+02
Trichlorofluoromethane		5.0E+04		2.8E+04
Trichloronate		2.0E+03		2.0E+03
Trichlorophenol, 2,3,4-		3.2E+04		2.2E+04
Trichlorophenol, 2,3,5-		2.6E+04		1.6E+04
Trichlorophenol, 2,3,6-		3.2E+03		1.7E+03
Trichlorophenol, 2,4,5-		2.1E+04		1.2E+04
Trichlorophenol, 2,4,6-	1.1E+03	6.8E+02	8.6E+02	6.8E+02
Trichlorophenol, 3,4,5-		4.7E+04		3.7E+04
Trichlorophenoxyacetic acid, 2,4,5-		2.8E+03		1.8E+03
Trichloropropane, 1,1,2-		1.0E+03		5.9E+02
Trichloropropane, 1,2,3-	4.1E+00	2.4E+03	4.1E+00	1.5E+03
Triethanolamine		1.1E+03		5.5E+02
Triethylamine		1.5E+02		7.7E+01
Triethylene glycol		2.0E+06		2.0E+06
Triethylphosphorothioate, O, O, O-		5.7E+00		5.7E+00
Trifluralin	2.5E+03	4.2E+03	2.5E+03	3.5E+03
Trimethylamine		2.1E+02		1.1E+02
Trimethylbenzene, 1,2,3-		1.7E+02		8.7E+01
Trimethylbenzene, 1,2,4-		2.1E+02		1.1E+02
Trimethylbenzene, 1,3,5-		1.6E+02		8.3E+01
Trinitrobenzene, 1,3,5-		2.0E+04		2.0E+04
Trinitrophenylmethylnitramine (tetryl; nitramine)		1.0E+02		5.4E+01

Texas Commission on Environmental Quality - Table 5
Combined Tier 1 Soil PCLs
Commercial/Industrial

Last Revised March 25, 2009

	$^{Tot}Soil_{Comb}$ (includes inhalation, ingestion, and dermal pathways)			
	0.5 acre source area		**30 acre source area**	
Chemical of Concern	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**	**Carcinogenic (mg/kg)**	**Noncarcinogenic (mg/kg)**
Trinitrotoluene, 2,4,6-	6.4E+02	7.8E+01	6.4E+02	4.5E+01
Uranium (soluble salts)		2.9E+03		2.9E+03
Valeric acid (pentanoic acid)		1.8E+02		9.5E+01
Vanadium		2.4E+03		2.3E+03
Vernam		6.8E+02		6.8E+02
Vinyl acetate		4.3E+03		2.2E+03
Vinyl chloride	1.5E+01	9.1E+02	1.3E+01	5.5E+02
Vinylcyclohexane		2.1E+02		1.1E+02
Warfarin		1.1E+02		7.8E+01
Xylene, m-		1.3E+04		6.7E+03
Xylene, o-		9.1E+04		4.8E+04
Xylene, p-		1.3E+04		6.7E+03
Xylenes		1.2E+04		6.5E+03
Zinc		2.5E+05		2.5E+05
6 C aliphatics (TPH)	---	4.0E+03	---	2.1E+03
>6-8 C aliphatics (TPH)	---	4.0E+03	---	2.1E+03
>8-10 C aliphatics (TPH)	---	4.1E+03	---	2.2E+03
>10-12 C aliphatics (TPH)	---	4.0E+03	---	2.1E+03
>12-16 C aliphatics (TPH)	---	6.2E+03	---	3.3E+03
>16-21 C aliphatics (TPH)	---	1.0E+06	---	1.0E+06
>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	---	1.0E+06	---	1.0E+06
>7-8 C aromatics (TPH)	---	1.8E+04	---	1.0E+04
>8-10 C aromatics (TPH)	---	3.9E+03	---	2.1E+03
>10-12 C aromatics (TPH)	---	6.9E+03	---	4.0E+03
>12-16 C aromatics (TPH)	---	1.2E+04	---	7.8E+03
>16-21 C aromatics (TPH)	---	1.9E+04	---	1.9E+04
>21-35 C aromatics (TPH)	---	1.9E+04	---	1.9E+04
Footnotes				
[1]Note that much higher PCLs for mercury may be obtained using a pH-dependent Kd based on site-				
*These compounds, acetic acid, ammonium polyphosphate, ammonium salts, calcium, chloride, ehtylene,				
All values capped at 1E+06				