

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action  
Environmental Indicator (EI) RCRAInfo code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** TXI Operations, LP  
**Facility Address:** 245 Ward Road; Midlothian, TX; 76065  
**Facility EPA ID #:** TXD007349327

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

X

— If yes - check here and continue with #2 below.

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— If no re-evaluate existing data, or

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— If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			Elevated levels of metals and pH
Air (indoors) <sup>2</sup>		X		None reported/COCs are metals
Surface Soil (e.g., <2 ft)		X		None Reported
Surface Water		X		None Reported
Sediment		X		None Reported
Subsurf. Soil (e.g., >2 ft)		X		None Reported
Air (outdoors)		X		None Reported

— If no (for all media) - skip to #6, and enter “YE” status code after providing or citing appropriate “levels”, and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

X  
— If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

— If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

**FACILITY DESCRIPTION**

The TXI Operations Midlothian Cement Plant is location approximately 2.1 miles southwest of the city of Midlothian. The facility is approximately 1,588 acres and consists of a Portland cement manufacturing plant with a fuel delivery system, a resource recovery area and storage facility, and a quarry. Limestone and shale are mined from a quarry onsite, and are used as raw product in the production of Portland cement. The facility manufactures cement by both “wet” and “dry” processes. Wet process cement is made in four rotary kilns that have been in operation since the early 1960s. Dry process cement is made in a single kiln that has been in operation for about 3-1/2 years (Reference 4) operates four dry cement kilns and one wet cement kiln (Reference 5). The facility utilizes coal and natural gas to fire the kilns. In addition, the “wet” process kilns are able to burn hazardous and non-hazardous waste derived fuels (WDF) for energy recovery.

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<sup>1</sup> Acontamination@ and Acontaminated@ describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based Alevels@ (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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The facility is registered as a large quantity generator (LQG) of hazardous waste and operates as a permitted treatment, storage and disposal (TSD) and Boiler and Industrial Furnace (BIF) facility under HW Permit 50316-001. The permit was renewed on July 18, 2001 and was originally issued on March 19, 1999. TXI submitted an application for a Class I Permit Modification on July 11, 2005, but there was no additional information regarding this modification in the file materials.

The storage and fuel blending facility consists of eight aboveground hazardous waste storage tanks. Tank system safety features include a vapor-vent back system to control emissions, level detectors and detector backups, a nitrogen blanket system, an audible alarm system and pressure relief valves. The system is monitored by a computer. Cement kiln dust (CKD) is generated from the production of cement and is transported to an on-site landfill.

### **PREVIOUS INVESTIGATIONS**

In 1993, TWC directed TXI to conduct an investigation of four solid waste management units identified at the site. The four units were divided into two Unit Areas: Unit Area 1, which consists of an active Cement Kiln Dust (CKD) Class II landfill, an inactive CKD Class II landfill and a Class II non-hazardous waste landfill for plant refuse; and, Unit 2, which was a product storage area for diesel fuel and solvent. A Site Investigation (SI) Report was completed in December 1993 to assess the potential for soil and groundwater contamination from the two Unit Areas. Samples collected in Unit Area 2 indicated total petroleum hydrocarbon (TPH) and benzene, toluene, xylene, and ethylbenzene were below detection limits, except for one location, which indicated TPH below 100 mg/k and therefore; required no further action (Reference 1). According to Reference 3, TNRCC approved no further action at Area 2, although no record of this approval was found in available files. Results of the SI and a second SI Report of the MW-3 area, also dated December 1993, indicated that groundwater from Unit Area No. 1 had been impacted due to elevated pH in the groundwater samples collected from monitoring wells MW-3 and MW-7 (References 1 and 2). Soil boring SB3-6 also had an elevated pH. The MW-3 SI Report indicated that the outdoor storage of clinker could be contributing to the high pH, and reported that the facility had constructed an indoor storage area and excavated the areas previously used for the storage of clinker. An addendum to the report was submitted in May 1997, which concluded the groundwater pH would be monitored for an additional four years.

A Risk Assessment Report, dated June 6, 1997, investigated the potential for chemical impact to soil and groundwater resulting from the landfilling of CKD in Unit Area No. 1. The Risk Assessment Report concluded that no impact to soils existed at Unit Area No. 1. It also concluded that groundwater had not been impacted by chemicals of concern, except for the condition of the high pH. The Risk Assessment Report indicated that the condition of high pH (not viewed as a hazardous constituent) was being remedied by natural conditions and had not reached beyond the landfill boundary or the facility boundary. The Risk Assessment Report further supported the closure for Unit Area No.1 (Reference 6).

### **REGULATORY HISTORY**

A printout of the Comprehensive Corrective Action Report for the TXI Operations LP—Midlothian Cement Plant, run on December 28, 2005, indicates that a CA725 determination of “YES” was applicable as of September 1, 1998. In addition, a CA750 determination of “YES” was applicable as of September 1, 1998 (Reference 1). A copy of the CA725 and CA750 were not available in the file materials reviewed.

TXI Operations, LP—Midlothian Cement Plant operates under the following permits (Reference 2):

1. Texas Solid Waste Disposal Act (HW-50316-001, TCEQ)
2. Texas Clean Air Act (1360A, TCEQ)
3. Hazardous Waste Management program under RCRA (HW-50316-001, TCEQ and US EPA)
4. TPDES program under the Clean Water Act (04379 and TXR05K042, TCEQ)

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The active landfill has an associated disposal site deed recordation which states that “TXI Operations will permanently deposit industrial waste on the land described herein.” (Reference 7)

Permit Provision VII.B of TXI’s permit requires that TXI conduct RCRA Detection Monitoring at six groundwater monitoring wells semi-annually in the area of the CKD landfill, due to what was designated as a “most probably minor release based on elevated pH and specific conductance”. Chemicals of concern are arsenic, barium, chromium, cadmium, lead, and zinc. Based on available file materials, results from groundwater monitoring events in 2002 and 2004 exhibited periodic excursions with exceedances of upper tolerance limits (UTLs) established in the permit (Reference 7). TXI attributes the excursions to naturally occurring variability in the soils and turbidity in the shallow groundwater and petitioned TCEQ to terminate the monitoring. The request was denied by TCEQ on March 9, 2004 (Reference 9).

On December 12, 2005, TXI submitted a reassessment of Solid Waste Management Unit No. 1 Under Standard 2 of the Risk Reduction Rules. Analytical results of groundwater samples were compiled to show that there were a total of nine exceedances of UTLs during the 4-year monitoring period (October 1999 through March 2004). There were five exceedances in MW 105; two barium, two chromium, and one zinc. There were three exceedances in MW-111; one for chromium and two for pH. There were three exceedances for MW-107; once for barium, one for chromium and one for lead. Since March 2004, there have been two additional exceedances, which the facility states both are explained by outside factors unassociated with waste management activities. The facility further states that the pre March 2004 exceedances are due to outside influences such as infiltration of surface water, seasonal influences, and turbidity. According to the December 12, 2005 reassessment all metals concentrations are below their respective Medium Specific Concentrations under the Risk Reduction Rules. (Reference 14)

#### **RATONALE**

Groundwater: Intermittent exceedances of UTLs have been documented, including one exceedance of lead (0.024 mg/L vs. 0.02 mg/L) in 2001. In 2004, exceedances of the lead and chromium were documented, but attributed to factors outside of TXI’s waste management activities (Reference 14).

Air (Indoors): BTEX results in Unit 2 area were below detection levels (Reference 1). Remaining COCs are metals.

Surface Soil: No evidence of impacted soils was found in available file materials. Concentrations of metals in soils were found to be below Risk Reduction Standards No. 1 (Reference 4).

Sediment: No evidence of impacted sediments was found in available file materials.

Surface Water: No evidence of impacted surface water was found in available file materials.

Subsurface soils: No evidence of impacted subsurface soils was found in available file materials.

Air: No evidence of releases to air was found in available file materials.

#### **REFERENCES**

1. Site Investigation Report; SWMUs Area; prepared by G & A Environmental, dated December 1993.
2. Site Investigation Report; M-3 Area; prepared by G & A Environmental; dated December 1993.
3. Addendum #2 to Site Investigation Report; SWMUs Area; prepared by G & A Environmental, dated May 1997.
4. Assessment of Compliance with TNRCC Risk Reduction Rules, prepared by Compliance Solutions, Inc. dated June 6, 1997.
5. Executive Director’s Closing Arguments; SOAH Docket No. 582-97-0499; TNRCC Docket No. 96-1466 IHW; received November 1, 1999.

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6. Renewal HW Permit No. 50316-001; Issued by TNRCC; dated July 18, 2001.
7. Letter to Ms. Annie Mendoza, TNRCC; from Rex Coffman, TXI; Notification of Landfill Expansion Deed; dated April 1, 2002.
8. Letter to Mr. Billy Spiller, TNRCC; from Rex Coffman, TXI; RE: Results of the September 2002 Semi-annual Groundwater Monitoring events; dated November 1, 2002.
9. Letter to Rex Coffman, TXI; from Katherine Nelson, TCEQ; RE: Request to Terminate Semi-Annual Ground Water Monitoring; dated March 9, 2004.
10. Texas Commission on Environmental Quality, Investigation Report, prepared by Julianne King; dated May 2004.
11. Texas Commission on Environmental Quality, Investigation Report, prepared by Jim Kerlin; dated June 2005.
12. Correspondence from Rex Coffman of TXI Operations LP to Mr. Glenn Shankle of TCEQ, RE: TXI Operations, LP, Permit HW-50316-001, dated July 11, 2005.
13. RCRA Info Comprehensive Corrective Action Report, Report run on December 28, 2005.
14. Final Report Reassessment of Solid Waste Management Unit No. 1 (Cement Kiln Dust Landfill) at TXI Operations, LP Under Standard 2 of the Risk Reduction Rules; prepared by The Benham Companies; dated December 12, 2005.
15. Communication Log; Telephone Conversation with Bill Spiller, TCEQ; and Ann Anderson, TechLaw, Inc.; Re: TXI Operations; dated. May 30, 2006.
16. Communication Log; Telephone Conversation with Kelly Wilson, TCEQ; and Ann Anderson, TechLaw, Inc.; Re: TXI Operations; dated. May 30, 2006.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<b>“Contaminated” Media</b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	No	No	No	No	No	No	No
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)							
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors= spaces for Media which are not Acontaminated@ as identified in #2 above.
2. enter Ayes@ or Ano@ for potential Acompleteness@ under each AContaminated@ Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential AContaminated@ Media - Human Receptor combinations (Pathways) do not have check spaces (A\_\_@). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter @YE@ status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

     If yes (pathways are complete for any AContaminated@ Media - Human Receptor combination) - continue after providing supporting explanation.

     If unknown (for any AContaminated@ Media - Human Receptor combination) - skip to #6 and enter AIN@ status code.

Rationale and Reference(s):

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<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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**Rationale**

Exceedances are intermittent and appear to be related to seasonal influences (all exceedances detected in late summer periods of low rainfall). Groundwater in the area is isolated in discrete pockets and is not migrating offsite. Due to low yield and moderate salinity values, this zone is not useable as a water source. According to the December 12, 2005 Reassessment, all metals concentrations are below their respective Medium Specific Concentrations under the Risk Reduction Rules. (Reference 14) Potential dermal exposure to workers or construction worker is very low and could easily be prevented through use of appropriate personnel protective equipment.

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **Asignificant**<sup>4</sup> (i.e., potentially **Aunacceptable** because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable **Alevels** (used to identify the **Acontamination**); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable **Alevels**) could result in greater than acceptable risks)?

—— If no (exposures can not be reasonably expected to be significant (i.e., potentially **Aunacceptable**) for any complete exposure pathway) - skip to #6 and enter **AYE** status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to **Acontamination** (identified in #3) are not expected to be **Asignificant**.

—— If yes (exposures could be reasonably expected to be **Asignificant** (i.e., potentially **Aunacceptable**) for any complete exposure pathway) - continue after providing a description (of each potentially **Aunacceptable** exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to **Acontamination** (identified in #3) are not expected to be **Asignificant**.

—— If unknown (for any complete pathway) - skip to #6 and enter **AIN** status code

Rationale and Reference(s):

See explanation to Number 3

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<sup>4</sup> If there is any question on whether the identified exposures are **Asignificant** (i.e., potentially **Aunacceptable**) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the Asignificant@ **exposures** (identified in #4) be shown to be within **acceptable** limits?

- If yes (all Asignificant@ exposures have been shown to be within acceptable limits) - continue and enter AYE@ after summarizing and referencing documentation justifying why all Asignificant@ exposures to Acontamination@ are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- If no (there are current exposures that can be reasonably expected to be Aunacceptable@)- continue and enter ANO@ status code after providing a description of each potentially Aunacceptable@ exposure.
- If unknown (for any potentially Aunacceptable@ exposure) - continue and enter AIN@ status code

Rationale and Reference(s):



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**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

**RECOMMENDED FURTHER ACTIONS:**

The Agency may wish to follow-up on TCEQ review of the TXI's December 12, 2005 Reassessment of Solid Waste Management Unit No. 1 under Standard 2 of the Risk Reduction Rules.