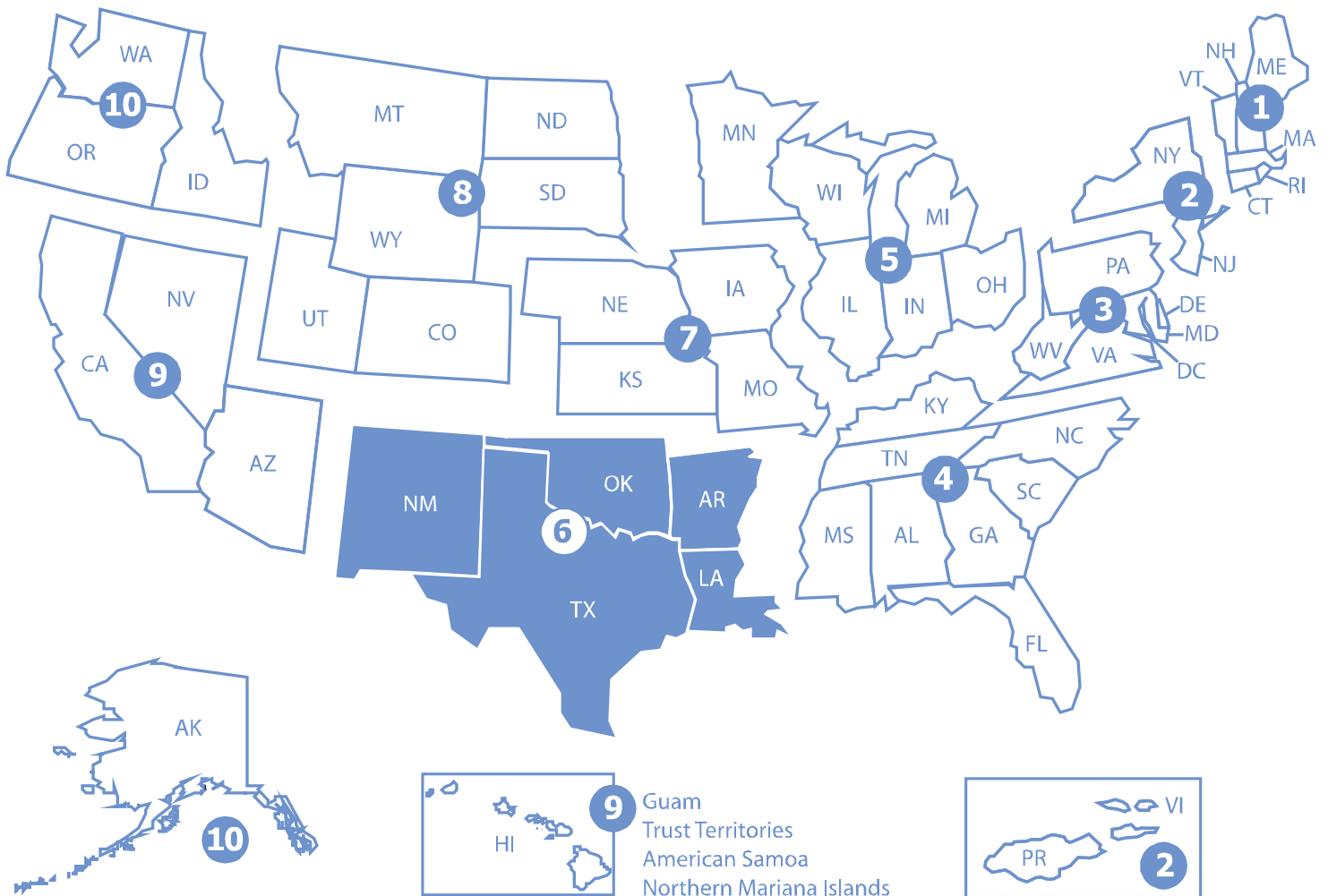




# Support Document for the Revised National Priorities List Final Rule – Attebury Grain Storage Facility



**Support Document for the  
Revised National Priorities List  
Final Rule  
Attebury Grain Storage Facility  
April 2009**

**Site Assessment and Remedy Decisions Branch  
Office of Superfund Remediation and Technology Innovation  
Office of Solid Waste and Emergency Response  
U.S. Environmental Protection Agency  
Washington, DC 20460**

## Table of Contents

<b>Table of Contents</b> .....	ii
<b>Executive Summary</b> .....	iii
<b>Introduction</b> .....	iv
Background of the NPL.....	iv
Development of the NPL.....	v
Hazard Ranking System .....	v
Other Mechanisms for Listing.....	vi
Organization of this Document .....	vii
Glossary.....	vii
<b>Response to Comments</b> .....	iii
<b>1. List of Commenters/Correspondents</b> .....	iii
<b>2. Site Description</b> .....	1
<b>3. Summary of Comments/Correspondence</b> .....	2
3.1 Support for Listing.....	2
3.2 Origin of Release/Liability .....	2
3.3 Association of Substances with Source .....	3
3.4 Likelihood of Release–Significant Increase .....	7
3.5 Likelihood of Release–Attribution .....	9
3.5.1 EDB and Site Inspection .....	9
3.5.2 Representativeness of EDB Contaminated Wells .....	10
3.5.3 Other Sources.....	13
3.6 Waste Characteristics/Toxicity.....	17
<b>4. Conclusion</b> .....	19

## **EXECUTIVE SUMMARY**

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List (NPL) was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Attebury Grain Storage Facility site, proposed on September 3, 2008 (73 FR 51393). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in April 2009. Several additional sites are being promulgated concurrently.

## INTRODUCTION

This document explains the rationale for adding the Attebury Grain Storage Facility site in Happy, Texas, to the National Priorities List (NPL) of uncontrolled hazardous waste sites and also provides the responses to public comments received on this site. The EPA proposed this site on September 3, 2008 (73 FR 51393). This site is being added to the NPL based on an evaluation under the Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in April 2009.

### Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq.* in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101[23]). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101[24]). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on September 3, 2008 (73 FR 51368). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on September 3, 2008 (73 FR 51393).

## **Development of the NPL**

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

## **Hazard Ranking System**

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;

- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats as identified below:

- Ground Water Migration ( $S_{gw}$ )
  - drinking water
- Surface Water Migration ( $S_{sw}$ )

The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.

  - drinking water
  - human food chain
  - sensitive environments
- Soil Exposure ( $S_s$ )
  - resident population
  - nearby population
  - sensitive environments
- Air Migration ( $S_a$ )
  - population
  - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100:

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

## **Other Mechanisms for Listing**

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and

- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

## Organization of this Document

The following section contains EPA responses to site-specific public comments received on the proposal of the Attebury Grain Storage facility site on September 3, 2008 (73 FR 51393). The site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses to each comment. A concluding statement indicates the effect of the comments on the HRS score for the site.

## Glossary

The following acronyms and abbreviations are used throughout the text:

<b>1,2-DCA</b>	1,2-dichloroethane
<b>Agency</b>	U.S. Environmental Protection Agency
<b>ATSDR</b>	Agency for Toxic Substances and Disease Registry
<b>bgs</b>	below ground surface
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 <i>et seq.</i> , also known as Superfund
<b>CTC</b>	carbon tetrachloride
<b>EDB</b>	1, 2-dibromomethane
<b>EPA</b>	U.S. Environmental Protection Agency
<b>HRS</b>	Hazard Ranking System, Appendix A of the NCP
<b>HRS score</b>	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
<b>MCL</b>	Maximum Contaminant Limit
<b>MDL</b>	Method Detection Limit
<b>NCP</b>	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
<b>NPL</b>	National Priorities List, Appendix B of the NCP
<b>RI</b>	Remedial Investigation
<b>SARA</b>	Superfund Amendments and Reauthorization Act of 1986, Public Law No. 99-499, stat., 1613 <i>et seq.</i>
<b>SQL</b>	Sample quantitation limit
<b>SSI</b>	Screening site inspection
<b>TCEQ</b>	Texas Commission of Environmental Quality
<b>T/M</b>	Toxicity/mobility

## 1. List of Commenters/Correspondents

EPA HQ-SFUND-2008-0083-0004	Letter from Rick Perry, Governor of Texas to Richard E. Greene, Regional Administrator, EPA Region 6, dated December 14, 2008.
EPA-HQ-SFUND-2008-0083-0005	Comment submitted by Gerald J. Pels, Counsel, Sutherland, Asbill & Brennan LLP on behalf of Attebury Grain, LLC, dated May 19, 2008.
EPA-HQ-SFUND-2008-0083-0006	Comment submitted by Michael W. Steinberg, Counsel, Morgan, Lewis & Bockius LLP on behalf of Superfund Settlement Projects (SSP), dated June 2, 2008.

## 2. Site Description

The Attebury Grain Storage Facility site is located in the panhandle of Texas approximately 30 miles south of Amarillo, Texas, and west of Interstate 27 in downtown Happy, Texas. The site consists of a release of 1, 2-dibromethane (EDB), carbon tetrachloride (CTC), and 1,2-dichloroethane (1,2-DCA) to ground water. The source of the release was attributed to the use of a CTC-based mixture containing EDB and 1,2-DCA to extinguish a fire when the grain storage facility (elevator and bins) on property that is now owned by Attebury Grain, Inc. burned down in 1962. The ground water contamination extends off the grain storage property to several public and private wells that serve the City of Happy and its residents.

The principal source of drinking water in the City of Happy is the Ogallala Aquifer, which is found at a depth of 150 feet below ground surface (bgs). The regional ground water flow gradient in this aquifer is to the east-southeast, but because of heavy use of the aquifer for irrigation and municipal purposes and the limited aquifer recharge due to the hot, dry climate in which evaporation rates exceed the rainfall rate, this aquifer is being drawn down and local flow gradient is likely to be affected by the pumping of nearby wells.

An observed release of EDB, CTC, and 1,2-DCA to the Ogallala Aquifer was documented by chemical analysis of ground water samples. The presence of these three substances together was shown to be logical given the history of their combined use. Prior to the 1970s, CTC was widely used as a grain fumigant, frequently mixed with EDB and 1,2-DCA. Numerous mixtures containing CTC, EDB, and 1,2-DCA used in the post harvest storage industry were manufactured under a variety of trade names. Prior to 1970s, CTC was used as a fire extinguishant because of its fire retarding properties.

One City of Happy municipal well was closed in 1991 because the concentration of CTC exceeded EPA's Safe Drinking Water Act Maximum Contaminant Level (MCL). In follow-up, in August 2006 the Texas Commission of Environmental Quality (TCEQ) sampled several city and private wells in Happy in the vicinity of the location of the 1962 fire. Hazardous substances found included CTC, 1,2-DCA, and EDB. EDB was found in one of the wells (GW-09A) together with CTC and 1,2-DCA. When released into the soil, these contaminants will either evaporate into the air or travel down through the soil and enter the ground water.

TCEQ conducted sampling in March and November 2007 during its screening site inspection (SSI), collecting ground water samples. EDB was detected in samples from two wells (GW-09A and GW-22; see Figure 3 of the HRS documentation record as proposed)

In addition to sampling the ground water, a soil vapor well was installed on the Attebury site and soil vapor samples were collected during the August 2006 sampling event. EDB was detected in a soil vapor sample at a depth of 95-100 feet. Soil vapor sampling in the source area also indicated the presence of CTC under the source location at depths from 7 to 100 feet, with the highest concentrations of CTC found between 95 to 100 feet, the depth at which EDB was also found.

EPA and TCEQ performed a search for other possible sources of the three contaminants, including investigating the use of fumigants at the other two grain storage facilities in Happy, and identifying other possible sources of these substances based on other uses, but could not document any releases of the contaminants from other sources.

### **3. Summary of Comments/Correspondence**

Rick Perry, Governor of Texas, submitted a comment supporting the listing of this site. In a December 14, 2007, letter to the EPA Region 6 Administrator, Governor Perry expressed his support of listing the Attebury Grain Storage Facility site on the NPL based on EPA and TCEQ evaluations of the site under the federal HRS.

Michael W. Steinberg, Counsel, Morgan, Lewis & Bockius LLP, on behalf of Superfund Settlements Project, submitted a general comment that applied to all EPA NPL listing proposals included in the March 19, 2008, proposed rule (73 FR 14742). This comment focused on the need for EPA to present its rationale (i.e., reasons for listing) and purpose of listing for each site to encourage dialogue between the Agency and stakeholders. EPA responds to this comment in the preamble to the rule promulgating this site to the NPL.

Gerald J. Pels, Counsel, Sutherland, Asbill & Brennan LLP, on behalf of Attebury Grain, LLC, commented that the addition of the Attebury Grain Storage Facility site to the NPL is inappropriate and requested that EPA reconsider its proposed listing. Mr. Pels asserted that EPA did not adequately document EDB association with the site source or attribution of an EDB release to the site, that EPA did not sufficiently demonstrate there were no other sources of the EDB ground water contamination, that EPA did not adequately establish a significant increase of EDB above background levels, and that EPA had improperly used the toxicity and mobility of EDB to reflect the risk posed by the site.

#### **3.1 Support for Listing**

Comment: The Governor of Texas expressed his support of listing the Attebury Grain Storage Facility site on the NPL based on EPA and TCEQ evaluations of the site under the federal HRS.

Response: EPA is adding the Attebury Grain Storage Facility site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA. EPA will examine the site to determine the appropriate response action(s), which will include identifying the sources of the ground water contamination. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate. Actual funding of site remediation may not necessarily be undertaken in the precise order of HRS scores and, upon more detailed investigation, may not be necessary at all in some cases.

#### **3.2 Origin of Release/Liability**

Comment: In his summary of the facts used by EPA to determine an HRS score for the Attebury Grain Storage Facility site, Mr. Pels stated that Attebury Grain, Inc. (the present owner of the grain storage

facility) was not associated with the release of EDB, CTC, or 1,2-DCA, which forms the basis for the HRS score. For example, he stated:

- Attebury avers that it never used CTC (or, EDB, or 1, 2-DCA for that matter) at the site during the period of its ownership (1986-Present).
- EPA attributes CTC concentrations to use (alleged to be by the former site owner) of the chemical or a mixture containing it, to extinguish a grain elevator fire in 1962, contending that any excess liquid containing CTC, along with any other fire fighting fluids, would have a significant chance to enter the soil and migrate to the ground water.

Response: EPA does not consider whether any party may be liable for response costs when evaluating a site under the HRS. The NPL serves primarily as an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. Identification of a site for the NPL does not reflect a judgment on the activities of the owner(s) or operator(s) of a site. It does not require those persons to undertake any action, nor does it assign any liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards. This position, stated in the legislative history of CERCLA, has been explained in the Federal Register (48 FR 40759, September 8, 1983 and 53 FR 23988, June 24, 1988).

### 3.3 Association of Substances with Source

3.3.1 Comment: Mr. Pels stated that EPA did not offer any reasonable explanation or any facts supported by the HRS documentation record to link EDB to the site. In questioning the linkage of EDB with the site, Mr. Pels raised questions regarding the association of EDB with the site source, which consists of releases of EDB, CTC, and 1,2-DCA that allegedly were used to quench a grain elevator fire in 1962. Mr. Pels concluded there is no evidence in the administrative record establishing that a release of EDB occurred at the Attebury site.

Response: EDB was appropriately associated with the site source, as documented in the HRS documentation record as proposed, and is properly included in the HRS evaluation.

Inclusion of a contaminant in the HRS evaluation does not require that the hazardous substance be documented in the source specifically by sampling, or that specific source(s) of the hazardous substances be documented at all, provided that definitive information does not indicate the contrary. The HRS identifies the requirements for association of hazardous substances with a source in HRS Section 2.2.2, *Identify hazardous substances associated with a source*. It states that:

[f]or each of the three migration pathways; [the user] consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway. In some instances, a hazardous substance can be documented as being present at a site (for example, by labels, manifests, oral or written statements), but the specific source(s) containing that hazardous substance cannot be documented. For the three migration pathways, in those instances when the specific source(s) cannot be documented for a hazardous substance, consider the hazardous substance to be present in each source at the site, except sources for

which definitive information indicates that the hazardous substance was not or could not be present.

As discussed on pages 14-16 of the HRS documentation record as proposed, the only known source of an EDB release (and CTC and 1,2-DCA releases) in the vicinity of Happy was the use of a fumigant to quench a fire that occurred in December 1962. When an explosion and fire occurred at the grain storage facility on property now owned by Attebury Grain, Inc., the owner of the facility applied three drums of a fumigant containing CTC or a CTC mixture, likely containing EDB and 1,2-DCA, onto the smoldering grain in an attempt to extinguish the fire, a fact not disputed by the commenter.

EPA associated EDB with the site source for three primary reasons: (1) EDB was shown to likely be present in the fumigant mix that was used to quench the 1962 fire at the site; (2) EDB was documented in a soil vapor sample taken from below the location of the fire; and (3) EPA could identify no other source of EDB in the vicinity of the site.

EPA considers it more likely than not that EDB was in the fumigant mix used to quench the fire. Prior to the 1970s, CTC was commonly mixed with other substances, such as EDB or 1,2-DCA, in fumigants. Reference 18 of the HRS documentation record as proposed lists numerous fumigant mixtures containing CTC, EDB, and 1,2-DCA sold for use in the United States under a variety of trade names with uses in the post harvest industry. Given how often commercial fumigant mixtures that contained CTC also contained EDB and 1,2-DCA, it is likely that the CTC material that the facility owner had on the property and used on the fire was a mixture of CTC, EDB, and 1,2-DCA. Combined with the information regarding use of CTC-containing drums to quench the fire, by an eyewitness statement (see Reference 53 of the HRS documentation record as proposed) it is sufficient to link EDB with the source.

That EDB was found in a soil vapor sample collected beneath the location of the fire was pointed out by Mr. Pels in his comments and is documented on page 16 of the HRS documentation record as proposed. While Mr. Pels commented on the adequacy of this information, as explained in section 3.3.3 of this support document, his comments did not alter the finding of EDB in the sample or its use in associating EDB with the site source. The soil vapor sampling documented on page 16 of the HRS documentation record as proposed links EDB to the source.

The documentation of the finding of no other source of the EDB release and responses to Mr. Pels comments on the adequacy of EPA's effort to find other sources is discussed in detail in section 3.5.3 of this support document. As discussed in that section, EPA's search was sufficient and consistent with the HRS requirements. Moreover, Mr. Pels only speculated about the possibility of other sources of EDB and did not provide any documentation to support his speculation.

Together, the three considerations presented above are sufficient to associate EDB with the site source.

Furthermore, the HRS contains specific instructions on how to score a site where a substance is present at the site, such as in an observed release, but the information necessary to associate the substance with a source is considered incomplete. HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states that:

In some instances, a hazardous substance can be documented as being present at a site (for example, by labels, manifests, oral or written statements), but the specific source(s) containing that hazardous substance cannot be documented. For the three migration pathways, in those instances when the specific source(s) cannot be documented for a hazardous substance, consider the hazardous substance to be present in each source at the site, except sources for which definitive information indicates that the hazardous substance was not or could not be present.

Therefore, even if the specific source of EDB could not be documented, because EDB has been documented as being at the site through establishing it as an observed release substance, EDB can still appropriately be considered associated with the site source in the HRS evaluation. Moreover, the information discussed above regarding the likelihood of EDB having been present in the released CTC pesticide mixture negates the inference that definitive information exists to show that the substance could not be present.

- 3.3.2 Comment: Mr. Pels commented that the Agency accepts the unsupported assumption that other potential industrial sources in the area have not used CTC (or its mixtures) at face value, and that neither the administrative record nor the reference documents support this assumption. Mr. Pels concluded that EDB may have come from a different source.

Response: As discussed in section 3.5, *Likelihood of Release –Attribution*, of this support document, and specifically in section 3.5.3, *Other Sources*, of this support document, EPA conducted sufficient efforts to document, in accordance with the HRS, that there are no other known sources of EDB releases in the vicinity of this site.

As discussed in more detail below, EPA’s search for possible sources of EDB and the other release substances focused mainly on other possible grain elevators in the area that also may have used fumigants. EPA considered that the documentation that CTC, EDB, and 1,2-DCA were commonly found as co-ingredients in pesticide formulations associated with the grain storage industry, coupled with the finding that EDB was found in ground water and soil vapor only in the presence of CTC, supported the conclusion that the source of the EDB and the CTC is likely the same common source, possibly a result of fumigant applications in the grain storage business.

Therefore, as discussed on page 30 of the HRS documentation record as proposed, EPA identified three grain storage elevator facilities in the City of Happy, including the Attebury Grain Storage Facility. The fact that three drums of CTC or CTC mixture were available and used to put out the 1962 fire reasonably establishes that CTC-containing fumigants were used at the Attebury Grain Storage Facility. EPA and TCEQ obtained documentation that the two other grain storage facilities in the City of Happy claimed they never used CTC during the time period they were operators of the facilities (see References 11 and 12 of the HRS documentation record as proposed). The statements in the HRS documentation record regarding CTC use at grain elevator facilities (see References 11 and 12 of the HRS documentation record as proposed) were submitted in response to a formal TCEQ request for information. Since this information was requested under state authority, there is a firm basis to believe the information is accurate. The Agency routinely uses information collected by States in its HRS evaluations. The documentation of TCEQ’s request for this information is in the site investigation report (see Reference 8 of the HRS documentation record as proposed).

As further support, EPA has since sent out CERCLA section 104(e) information request letters to the same grain elevator companies from which TCEQ requested information and received similar responses to those already in the HRS documentation record (see References 11 and 12 of the HRS documentation record as proposed). These 104(e) letters are being added to the administrative record for the final rule listing the Attebury Grain Storage Facility site on the NPL. These references serve as confirmation of the evidence in the HRS documentation record at proposal (see References 11 and 12 of the HRS documentation record as proposed).

Because the grain elevator companies' denials do not cover the entire period that those grain elevator storage facilities have been present, EPA considered the possibility that use of CTC or CTC mixtures containing EDB as fumigants might have caused the ground water contamination during periods not covered by the denials. EPA concluded that the City of Happy's climate and the considerable depth to ground water at the City of Happy is not conducive to downward migration of volatile substances such as CTC and EDB to ground water depths when used as fumigants under normal climate conditions in the area.

In addition, fumigant mixtures are designed and applied at the lowest possible rates to protect against infestation. Therefore, EPA concluded "in the Panhandle of Texas [it is more likely that] fumigants applied to grains would [more] likely be lost to volatilization rather than migrating to ground water."

EPA and TCEQ also looked for other sources of 1,2-DCA and identified that it had been used as a gasoline additive, but found no evidence of a release from storage facilities in the City of Happy.

Therefore, EPA was able to document only one release of EDB that was likely to be sufficiently significant to lead to the contamination in the Ogallala Aquifer. As presented in the HRS documentation record as proposed, the only CTC and EDB source EPA could document was the 1962 fire at the grain storage facility on the property now owned by Attebury Grain, Inc. EPA reasoned that any excess liquid containing a CTC mixture along with other fire fighting liquids, such as the large quantities of water that had been applied, would have a significant chance to enter the soil and migrate to ground water. This is further supported by the finding of CTC in soil vapor at several depths and EDB at the deepest sampled depth under the site of the fire 45 years later. In addition, a former City of Happy Volunteer fire department chief indicated that he knew of no other fires at grain elevators or leaking of CTC that occurred from the 1960s to 1998.

That the only source of EDB documented to be part of the site is the release associated with the 1962 fire, coupled with the finding of EDB in soil vapor under the fire location and EDB being a common ingredient in grain storage fumigants, especially those also containing CTC (see section 3.3.1 of this support document), is sufficient rationale for associating EDB with the site source.

- 3.3.3** Comment: In stating that the linkage of EDB to the site based on its presence in a single soil vapor sample is "dubious," Mr. Pels raised questions regarding the association of EDB with the only site source. He questioned the linkage to the source by stating that EDB was not detected in soil vapor samples from 7 to 10 foot depth and from 47 to 52 foot depth at the Attebury site, but rather was detected closer to ground water table at 95 to 100 foot depth. Mr. Pels concluded that if EDB were used at the site even in 1962, it would likely be closer to the surface.

Response: Although Mr. Pels is correct that EDB was not identified above detection limits in soil vapor samples at depths less than 100 feet, its association with the site source is nonetheless consistent with the HRS. As explained in section 3.3.1 of this support document, association of a substance with a source can be by sampling or non-sampling methods. EPA used both methods in this site.

As documented on page 16 of the HRS documentation record as proposed and on pages 13-15 of Reference 17 of the HRS documentation record as proposed, EDB was detected (0.480 ppbv) in a soil vapor sample from 95 to 100 foot depth. EPA agrees that EDB was not found in soil vapor samples from shallower depths (2 to 7 feet and 47 to 52 feet) at the same location. EPA notes that CTC was found at shallower depths, although the highest concentration was in the 95 to 100 foot depth.

One reason EDB was found 45 years after the fire in a sample from a greater depth and not at shallower depths and is still present due to the fire-related release is that the EDB contamination has likely volatilized out of the soil at the shallower depths. The situation at the site is conducive to volatilization. The climate at the City of Happy is hot, dry, and semi-arid with 16 to 18 inches of rain a year, the temperature ranges from the mid 90s in the summer to the 40s in the winter (see page 15 of Reference 31 of the HRS documentation record as proposed), and the evaporation rate is around 70 inches a year, more than three times the rainfall rate (see page 17 of Reference 31). Given the 45 years since the fire, it is entirely reasonable under these conditions that the EDB has volatilized out of the soil at the shallower depths.

The reason that CTC was found at shallower depths but EDB was not could be that not all the CTC had volatilized at the shallower depths because its initial concentration in the fumigant mixture was considerably higher than that of EDB. As shown in Reference 18 of the HRS documentation record as proposed, in most fumigants containing both CTC and EDB, the amount of EDB is a fraction of the amount of CTC in the mixture. Given that the detection limits for EDB and CTC are approximately the same (as documented in the various tables showing the EDB and CTC concentrations and quantitation limits for both substances on pages 25-29 of the HRS documentation record as proposed), it is reasonable to conclude that in the shallower soil depths where volatilization of substances from the soil more readily occurs, the concentration of EDB may have dropped below the quantitation limits whereas the concentration of the remaining CTC has not, and why this same situation has not occurred at greater depths. This supports both the presence of EDB at the 95 to 100 foot depth and the presence of CTC at shallower depths.

Hence, sampling information does not show that linkage of EDB to the 1962 fire source is dubious, nor does it document that another source of EDB exists.

### **3.4 Likelihood of Release—Significant Increase**

Comment: Mr. Pels commented that EPA appears to have incorrectly reported the results for EDB in GW-09A (0.535 µg/L) and GW-22 (0.044 µg/L) from the November 2007 sampling event as observed releases, when the SQL for the non-detected background samples (i.e., March 2007 samples from wells GW-04 and GW-21) appears to be 1.0 µg/L. Mr. Pels stated that this is significant in that the HRS documentation record specifies that “[i]f the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds its own sample quantitation limit [(SQL)] *and that of the background sample.*” (emphasis in original). Mr.

Pels argued that even the detection level set for EDB at the background wells could skew the HRS results in this case.

Response: Mr. Pels' comment is correct that the background samples listed on page 25 have an EDB SQL above that of the concentration of EDB in the two release samples collected in November 2007. Mr. Pels, however, is incorrect in judging the impact of these data on the identification of EDB as an observed release substance. As presented in HRS Table 2.3, an observed release can be established when the sample measurement is greater than or equal to the SQL:

If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds the sample quantitation limit.

As explained on page 25 of the HRS documentation record as proposed, EPA did not use the two background samples to set a background level, but rather to show that EDB was not ubiquitous. EPA explained:

Because some man-made substances [including EDB] are not found ubiquitously in the environment, they can be attributed only to a contaminant source. (Ref. 25, p.2) [Ref 25 is an EPA fact sheet titled *Establishing Background Levels*]. The presence of these substances in the release is sufficient to show contamination; a background sample is not needed (Ref. 25, p.2). CTC, EDB, and 1,2-DCA are man-made hazardous substances that are not naturally occurring and sampling data from background wells have demonstrated these substances are not ubiquitous in the vicinity of the site.

March 2007 samples from wells GW-04 and GW-21 were selected as representative background samples because they both had no detectable concentrations of EDB, CTC or 1,2-DCA and therefore support that these substances are not ubiquitous in the vicinity of the site.

EPA agrees that because the SQL is 1 µg/L in March 2007 samples from wells GW-04 and GW-21, these samples only document that EDB, CTC, and 1,2-DCA are not ubiquitous at or above the 1 µg/L concentration. Therefore, EPA has revised the HRS documentation record to replace these samples with appropriate samples from other sampling events in the HRS documentation record as proposed that clearly show that EDB, CTC, and 1,2-DCA are not ubiquitous in the vicinity of the site at concentrations comparable to the detection limit of the observed release samples presented for this purpose as proposed.

As identified in Table 6 on pages 27-29 of the HRS documentation record as proposed, EPA collected samples from numerous wells in the City of Happy as part of three separate sampling events (i.e., August 2006, March 2007, and November 2007). The samples from the different sampling events were analyzed for EDB using similar methods with different reported quantitation limits. Analytical data results for these three events are documented in References 16, 39, and 13 of the HRS documentation record as proposed, respectively.

Because of the differences in the reported detection limits and the difference in the times of the sampling events, separate background samples have been identified for the 2006 and the November 2007 sampling events in which EDB was found in release wells. In addition the locations of some of these background samples are upgradient of the site source based on the regional flow gradient of east-southeast. (See Figure 3 of the HRS documentation record as proposed.)

The table below presents both the analytical results for the EDB release samples concentrations as presented in the HRS documentation record as proposed and the newly selected background samples that appear in the HRS documentation record at promulgation. EPA notes that the data for the background samples included in the HRS documentation record at promulgation were in the record at the time of proposal although not used for the purpose of demonstrating that substances are not ubiquitous (i.e., no new data were added to the record).

Sample Location (Date Sampled)	EDB Sample Concentration (SQL)	Background Sample Location(s) (Date Sampled) (EDB Concentration)
GW-09A (Aug. 2006)	0.32J µg/L (0.04 µg/L)	GW-01 and GW-04 (Aug 2006) (0.04U µg/L) (Ref. 4, p. 10; Ref. 16, pp. 110-116)
GW-09A (Nov 2007)	0.535 µg/L (0.019 µg/L)	GW-04, GW-11 and GW-13 (Nov 2007) (0.019U µg/L) (Ref. 13, pp. 73-76, 85)
GW-22 (Nov 2007)	0.044 µg/L (0.019 µg/L)	

Notes: U Not detected at the reported detection limit  
 J Analyte detected below quantitation limit

For the August 2006 sampling event, two samples from wells GW-01 and GW-04 were selected to indicate that EDB was not ubiquitous at that time; both samples have non-detected results for EDB at an SQL of 0.04 µg/L. Both these well locations are located upgradient of the location of the 1962 fire based on regional flow gradient (page 24 of the HRS documentation record as proposed).

For the November 2007 sampling event, the samples selected to document that EDB was not ubiquitous at that time are from wells GW-04, GW-11, and GW-13. As noted above, well GW-04 is located upgradient from the site source based on the regional flow gradient. Wells GW-11 and GW-13 are downgradient of the site source, but nonetheless support the conclusion that EDB is not ubiquitous in the vicinity of the site.

The new background samples document that EDB is not ubiquitous in the vicinity of the site at concentrations above 0.04 µg/L, and 0.019 µg/L for August 2006 and November 2007 samples, respectively. These levels are significantly below the 2006 release sample EDB concentration of 0.32J µg/L and the November 2007 EDB release sample concentrations 0.535 µg/L and 0.044 µg/L.

Therefore, all three EDB release samples were appropriately used to establish observed releases of EDB using data in the HRS documentation record as proposed.

### 3.5 Likelihood of Release—Attribution

Mr. Pels commented that EPA cannot justify its attribution of EDB to the Attebury Grain Storage Facility and submitted the following specific comments. These comments and EPA’s responses are presented in sections 3.5.1 through 3.5.3 of this support document.

#### 3.5.1 EDB and Site Inspection

**3.5.1.1 Comment:** Mr. Pels stated that EPA did not include EDB in its screening analysis. He commented that the SSI Report did not take into account EDB because it was not reported, that the SSI Report also does not provide any evidence that releases in the wells (at the levels

identified in GW-09A and GW-22) are attributable to the site, and that this is because there is no evidence in the administrative record establishing that a release of EDB occurred at the Attebury site. Mr. Pels concluded that EPA's own documents provide that the SSI must serve as the basis for listing. Thus EPA must rely upon findings in the SSI when computing a HRS [score] for a facility, and that EPA has failed this requirement.

Response: Mr. Pels is incorrect that EDB was not included in EPA's screening analysis or taken into account in the SSI Report. Whereas Mr. Pels is correct that EPA relied on findings in the SSI when computing an HRS score for the facility, he is incorrect that the SSI is the only source EPA can rely on for this purpose.

Regarding inclusion of EDB in EPA's screening analysis and the SSI Report, the Site Characterization section of the SSI Report (see Reference 8 of the HRS documentation record as proposed) and pages 14-16 of the HRS documentation record as proposed, describe the history of investigation at the site and discuss contaminants found at the site including EDB, CTC, and 1,2-DCA. EDB was associated with the site in August 2006 prior to initiation of the SSI in 2007. Ground water samples collected as part of the SSI in March 2007 were analyzed for EDB, although EDB was not detected in these samples. In the November 2007 sampling during the SSI, EPA collected additional ground water samples from wells at the site and analyzed them for EDB. EDB was detected in these samples above the detection limit, and these sample results were used in the scoring of the site.

Regarding reliance on the SSI, the HRS (40 CFR Part 300, Appendix A) does not require that EPA use any particular source of information when evaluating a site under its terms. Thus, whereas EPA may rely on the findings of the SII in HRS scoring, it may also consider other data.

### **3.5.2 Representativeness of EDB Contaminated Wells**

Mr. Pels commented that the EDB contaminated wells were not representative of site conditions or any release alleged to have occurred there, and that EPA does not offer any reasonable explanation or any facts supported by the record to link EDB to the site and which account for the alleged presence of EDB in the upgradient wells. His specific comments on this topic and EPA's responses are provided in sections 3.5.2.1 through 3.5.2.3.

**3.5.2.1 Comment:** Mr. Pels stated that EPA has not established that local ground water flow is contrary to the regional flow direction. Mr. Pels continued that EPA attempted to explain the high EDB in upgradient wells by rationalizing that because there are no other documented sources of EDB upgradient, and that pumpage of city and private wells must have influenced local ground water flow and therefore contaminant transport and distribution. Mr. Pels stated that "[t]he Agency, however, neither substantiates its claim that there are no other sources nor the conclusion that it draws from it regarding the effect of well pumpage on local groundwater flow." Mr. Pels specifically commented that, "[t]hese wells [GW-09A and GW-22] are located north-northeast and east-northeast, respectively, from the Site. Significantly, these locations are away from the east-southeasterly gradient of the Ogallala Aquifer and underlying strata in the region surrounding the Site, and therefore upgradient from the general direction of the plume allegedly emanating from the Site." In addition, Mr. Pels pointed out that "Well 22 would appear to be cross-gradient of the Site, but down-gradient of Well 9A."

Response: EPA agrees that it did not demonstrate that the local ground water flow gradient was different than the regional flow gradient. The HRS does not require EPA to do so. In

establishing an observed release by chemical analysis to ground water, EPA did not rely on ground water flow gradients to attribute the release of the EDB to the site or to establish background concentration levels to establish a significant increase in contaminant concentrations.

The basic HRS requirements to establish an observed release by chemical analysis are contained in HRS Section 2.3, *Likelihood of release*. This section states:

The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, some portion of the release must be attributable to the site.

The specific HRS requirements for establishing an observed release by chemical analysis to ground water are in HRS Section 3.1.1, *Observed release*. This section states that an observed release by chemical analysis is established when

an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release[.]

Thus, the HRS does not require that the background levels be established based on flow direction or specify how the attribution must be established. EPA agrees that upgradient samples are certainly an appropriate way to establish background and that flow gradient should be considered in establishing attribution, but in some cases, such as at this site, the information necessary to do so is not available.

Because EPA and TCEQ did not have local flow gradient information, they first reviewed the information already available. As noted by Mr. Pels, EPA identified that based on regional flow direction the highest contamination levels were in wells that would be considered slightly upgradient (about 1,200 feet) of the fire location. Thus, the highest concentration location appears to contradict the regional flow direction assumption.

However, as stated on page 24 of the HRS documentation record as proposed, EPA found no documented releases of CTC, EDB or 1,2-DCA between the location of the well with the highest contaminant concentrations (GW-09A) and the location of the fire source (see Figure 3 of the HRS documentation record as proposed). Therefore, EPA looked for other reasons for this seeming contradiction in contaminant concentration and flow direction.

The first possible reason is that the contamination was not necessarily traveling only vertically as it migrated to the ground water. The depth to ground water (the Ogallala Aquifer) in the vicinity of this site is well over 100 feet, and well GW-09A was screened from 150 to 200 feet (see page 26 of the HRS documentation record as proposed). As detailed on page 23 of the HRS documentation record as proposed, the stratum between the land surface and the Ogallala Aquifer is called the Quaternary System, and is composed of highly permeable sand with nearly impermeable caliche. (Caliche is mainly a calcium carbonate deposit that cements the sand together.) Water movement through the quaternary caliche deposit is through cracks and fissures or through well boreholes. The presence and depth of the caliche/sand layer at this site is represented in the geologic cross section on page 14 of Reference 8 in the HRS

documentation record as proposed. Thus, it is logical that the contamination releases during the fire could have migrated both horizontally and vertically to the northeast before reaching the ground water in the Ogallala Aquifer.

The second possible explanation for what appears to be contaminant transport counter to the regional flow direction is that, as identified by the commenter, the local flow direction is not the same as the regional flow direction. As is documented in several of the geologic references (see References 29, 30, and 31 of the HRS documentation record as proposed), the entire Ogallala Aquifer in general, and in Swisher County and under the City of Happy specifically, is being drawn down at the estimated rate of between 0.50 to 3.53 feet per year for wells with saturated sections between 10 to 110 feet due to the limited recharge of the aquifer and the heavy use of the ground water for irrigation. This amount of drawdown would certainly locally override or at least alter a regional flow gradient at least during periods when irrigation and public supply wells are being pumped. In fact, given that large amounts of water may have been used during the suppression of the fire in which the CTC mixture was released, it is logical that the drawdown caused by the pumpage of the fire water could have significantly distorted the local flow gradient at the time of the fire.

Therefore, EPA considered that although the CTC, EDB, and 1,2-DCA contamination concentrations appear to be higher at a location that would be contrary to the regional flow gradient, given that no other release of these substances could be identified, that the caliche layer might have caused horizontal migration as the contamination moved to the ground water, and that the drawdown of public and irrigation wells in the area could distort regional flow direction locally, it was reasonable for EPA to attribute the ground water contamination to the 1962 fire incident.

**3.5.2.2** Comment: Mr. Pels questioned the suitability of samples from well GW-21 to represent upgradient conditions for EDB and to indicate that the contamination in samples from well GW-9A could be attributed to the fire-related source. Mr. Pels stated:

In fact, GW 9A – which has a higher EDB reading than GW 22 – is located upgradient from GW-21, one of the two wells chosen to provide background levels for the region. Presumably GW 21 was chosen because its location was unaffected by the plume. It is, therefore, incongruous to associate high EDB readings found in GW 9A with contamination from the Site. GW-09A is so close to GW-21 that it could arguably represent background conditions.

Response: While Mr. Pels has misunderstood EPA's rationale for selecting well GW-21 as a background sample location, for a different reason EPA revised the set of background samples used in the HRS documentation record to establish that EDB is not ubiquitous and the background level of non- detect for EDB (see section 3.4 of this support document). However, these changes have no effect on the attribution of EDB in samples from well GW-09A to the site.

As explained in section 3.4 of this support document, EPA selected a sample from well GW-21 as a background sample not because of its location relative to the source or the releases wells, but because the sample from it documented that EDB was not ubiquitous at or above the SQL for that sampling event. Well GW-21's relative location in terms of flow gradient was not a factor in its selection. The sample from well GW-21, however, has been replaced not because of the well's location but because the sample's SQL was higher than the EDB release concentrations, as Mr. Pels pointed out.

As described in section 3.4 of this support document, five different samples from four well locations are presented in the HRS documentation record at promulgation to establish a background level of non-detect for EDB. Samples from these wells, GW 01, GW 04, GW-11 and GW-13 (see Figure 3 of the HRS documentation record as proposed), were selected to reflect background conditions both because EDB was not found above the SQL in samples from them, and because they are located in different directions from the site. Thus, the samples from these wells support the conclusion that EDB was not ubiquitous in the vicinity of the site.

Regarding the adequacy of the evidence supporting the attribution of the EDB in well GW-09A to the site, as explained in section 3.3.1 of this support document, the rationale presented in the HRS documentation record is sufficient to attribute the EDB in well GW-09A to the site. Mr. Pels presented no actual information, only speculation, to the contrary.

### 3.5.3 Other Sources

Mr. Pels questioned EPA's conclusion that there were no other sources of EDB contributing to ground water contamination.

#### 3.5.3.1 Comment: Mr. Pels stated that the "administrative record does not support the conclusion that no other facilities in the area contributed to EDB concentrations near the Site."

Response: EPA provided sufficient rationale to attribute the release of EDB to the site source. HRS Section 3.1.1, *Observed release*, requires that:

[s]ome portion of the significant increase must be attributable to the site to establish the observed release, except when the source itself consists of a ground water plume with no identified source, no separate attribution is required.

The HRS documentation record lists EDB, as well as CTC and 1,2-DCA, as observed release substances whose significant increase is in part due to releases from the site (see page 31 of the HRS documentation record as proposed). The support for the attribution of all three substances to the site is on pages 30-31 of the HRS documentation record as proposed. Further information on the uses of EDB is presented on page 16 of the HRS documentation record as proposed as part of the description of the site source (the release associated with the use of CTC or a CTC mixture to put out the 1962 fire).

As discussed in the Attribution section on pages 30-31 of the HRS documentation record as proposed, in support of EPA's conclusion that no other facilities in the area are known to have contributed to the release of EDB, EPA and TCEQ (1) identified common uses of the release substances, (2) identified that numerous mixtures of EDB, CTC, and 1,2-DCA have been commonly used in the post harvest grain storage industry, and (3) searched for possible sources of these substances in the vicinity of the site at other possible industrial and commercial facilities in Happy.

As discussed in the Source Identification section on page 16 of the HRS documentation record as proposed, EPA and TCEQ documented that CTC, EDB, and 1,2-DCA have been commonly used as grain fumigants, and that CTC has been used as a fire extinguishant. In support of these statements, EPA provided References 7, 26, and 52. Reference 7 is a report by the Congressional Research Service of the Library of Congress titled *Ethylene Dibromide: History, Health Effects, and Policy Questions*. Reference 26 is an Agency for Toxic Substances and Disease Registry (ATSDR) report titled *ToxFAQs for EDB*. Reference 52 is monograph from a

joint expert panel meeting including Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO) experts on pesticide residues in food and the environment.

EPA also documented the use of EDB in mixtures with CTC in fumigants. EPA provided References 52 and 18 of the HRS documentation record as proposed in support. Reference 52 discusses the possible health impacts of the residual of such fumigants on crops. Reference 18 is an excerpt from the Scorecard Chemical Profiles database, a publicly available internet database (available online at <http://www.scorecard.org/chemical-profiles/>) listing six pages of commercial fumigants that are mixtures containing both CTC and EDB.

EPA's search for possible sources of EDB and the other release substances focused mainly on other possible grain elevators in the area that also may have used fumigants. EPA considered that the documentation that CTC, EDB, and 1,2-DCA were commonly found as co-ingredients in pesticide formulations associated with the grain storage industry, coupled with the finding that EDB was found in ground water and soil vapor only in the presence of CTC (see pages 16 and 27 of the HRS documentation record as proposed), supported the conclusion that the source of the EDB and the CTC is likely the same common source, possibly a result of fumigant applications in the grain storage business.

Therefore, as discussed on page 30 of the HRS documentation record as proposed, EPA identified three grain storage elevator facilities in the City of Happy, including the Attebury Grain Storage Facility. The fact that three drums of CTC or CTC mixture were available and used to put out the 1962 fire (see Reference 53 of the HRS documentation record as proposed) reasonably establishes that CTC-containing fumigants were used at this facility. EPA and TCEQ obtained documentation that in 1991 the two other grain storage companies in the City of Happy claimed they never used CTC during the time period they were operators of the facilities (see Reference 11 and 12 of the HRS documentation record as proposed).

Because the other elevator companies' denials do not cover the entire period that those grain elevator storage facilities have been present, EPA considered the possibility that use of CTC or CTC mixtures containing EDB as fumigants might have caused the ground water contamination during periods not covered by the denials. EPA concluded that the City of Happy's climate and the considerable depth to ground water at the City of Happy is not conducive to downward migration of volatile substances such as CTC and EDB to ground water depths when used as fumigants under normal climate conditions. These conditions are a hot, dry semiarid climate with 16 to 20 inches of rain a year and temperature ranges from the mid-90s in the summer to the 40s in the winter (see page 15 of Reference 31 of the HRS documentation record as proposed); an annual evaporation rate of around 70 inches of rain a year, more than 3 times the rainfall rate (see page 17 of Reference 31 of the HRS documentation record as proposed); and depth to ground water of more than 100 feet (see well logs for wells in Reference 27 of the HRS documentation record as proposed).

In addition, as also documented on page 30 of the HRS documentation record as proposed, fumigant mixtures are designed and applied at the lowest possible rates to protect against infestation, and only small quantities are applied when used as a fumigant, generally 4 gallons per 1,000 bushels of produce (see page 58 of Reference 54 of the HRS documentation record as proposed). Therefore, EPA concluded "in the Panhandle of Texas [it is more likely that] fumigants applied to grains would [more] likely be lost to volatilization rather than migrating to ground water."

EPA and TCEQ also looked for other sources of 1,2-DCA and identified that it had been used as a gasoline additive, but found no evidence of a release from storage facilities in the City of Happy (see page 30 of the HRS documentation record as proposed.)

Therefore, EPA was able to document only one release of EDB that was likely to be sufficiently significant to lead to the contamination in the Ogallala Aquifer. As also presented on pages 30-31 of the HRS documentation record as proposed, the only CTC and EDB source EPA could document was the 1962 fire at the grain storage facility on the property now owned by Attebury Grain, Inc., in which multiple drums of CTC fumigant, most probably mixed with EDB and 1,2-DCA, were placed on the smoldering grain after water had been applied. EPA reasoned that any excess liquid containing a CTC mixture along with other fire fighting liquids, such as the large quantities of water that had been applied, would have a significant chance to enter the soil and migrate to ground water. This is further supported by the finding of CTC in soil vapor at several depths and EDB at the deepest sampled depth under the site of the fire 45 years later. In addition, a former City of Happy Volunteer fire department chief indicated that he knew of no other fires at grain elevators or leaking of CTC that occurred from the 1960s to 1998 (see Reference 53 of the HRS documentation record as proposed).

Based on the above information, EPA concluded that the application of a CTC mixture to extinguish the 1962 fire on the property now owned by Attebury Grain, Inc. was the most likely source of the EDB contamination in the ground water at this site.

Mr. Pels made several comments speculating about the possibility of other sources of EDB, but did not actually identify any.

**3.5.3.2** Comment: In reference to EPA's assertion that there was no other facility or source in the vicinity contributing to the EDB contamination, Mr. Pels commented that:

In fact, the record actually provides evidence that there potentially *are* additional contaminant sources. For example, the TCEQ observes in its May 2007 SSI Report, that in addition to CTC and other volatile organics, metals such as copper and lead had been detected above background levels in the wells affected by the plume. Because there is no identification in the record that these metals would necessarily be attributed to the Site, one could reasonably conclude that their presence indicates that other industrial sources contributed to pollution in the region.

Response: As explained in section 3.5.3.1 of this support document, EPA and TCEQ performed a search for other sources of EDB in the vicinity of the site and were unable to document any other source. Regarding the possibility of EDB coming from a source of copper and lead, EPA agrees that copper and/or lead were found at elevated levels in a few well samples (GW-11, GW-13, and GW-30) (see pages 23-25 of Reference 8 of the HRS documentation record as proposed). However, EPA has no reason, nor did Mr. Pels provide any documentation, to associate EDB with a lead or copper source. Further, examination of the EDB and CTC levels in samples in relation to the levels of these metals in the samples clearly indicates that elevated CTC and EDB levels are not found in the same well samples as the metals, suggesting that the CTC-EDB contamination and the copper-lead contamination are not from the same source.

**3.5.3.3** Comment: In support of his challenge to the attribution of and observed release of EDB to the site, Mr. Pels stated that EPA:

accepts the following unsupported assumptions at face value: (1) that other potential industrial sources in the area have not used CTC (or its mixtures) and (2) EDB could have been used in mixtures with CTC and therefore “probably” was present in the CTC allegedly used to douse the 1962 fire at the Site. Neither the administrative record nor the Reference documents support these assumptions.

Response: EPA supported its attribution of an observed release of EDB to the site in the HRS documentation record as proposed in accordance with HRS requirements (see pages 30-31 of the HRS documentation record as proposed). As discussed in sections 3.3.2 and 3.5.3.1 of this support document, EPA has explained why it attributed a release of EDB to the site and cited documentation that supports that rationale, in the HRS documentation record as proposed on pages 16, 31, and 32. This discussion specifically included EPA’s activities regarding its search for and consideration of other sources of EDB that could have contributed to the EDB release and documentation for why it considered EDB associated with the 1962 fire source. Mr. Pels has presented no documentation or rationale, only speculation, for why EPA’s rationale is inadequate or incorrect.

**3.5.3.4** Comment: Mr. Pels questioned the adequacy of EPA’s search for other sources of the release of EDB, stating:

Historic releases from a variety of sources have unquestionably occurred in the area. There is no other basis to explain the presence of 1,2 DCA, a chlorinated solvent, having no connection with the grain storage business. EPA acknowledges this, and in that case attributes it to other industrial sources including its general use as a solvent or historic usage as a gasoline additive.”

Response: EPA considered the possibility that 1,2-DCA could have been released from other sources in the City of Happy, and that EDB could also have been associated with these other sources, and found no evidence to support this conclusion.

Mr. Pels is incorrect in his statement that 1,2-DCA has no connection with the grain storage business. EPA presented, on pages 30-31 of the HRS documentation record as proposed, its explanation for associating 1,2-DCA with the grain storage business in attributing a release of 1,2-DCA as part of the fumigant mixture released while extinguishing a fire in 1962. EPA further identified that this fire was extinguished in 1962 at the grain storage facility on the property now owned by Attebury Grain, Inc., using CTC or a CTC mixture. EPA identified that 1,2-DCA was in numerous fumigant mixtures used in the post harvest storage industry at the time of the fire, noting that these mixtures also contained CTC or EDB (see the Source Identification section on page 16 of the HRS documentation record as proposed and the discussion on documentation of the use of 1,2-DCA, EDB, and CTC in fumigant mixes in section 3.5.3.1 of this support document). Thus, 1,2-DCA can be associated with the grain storage business in general and the Attebury Grain, Inc., property specifically.

EPA also considered the possibility that 1,2-DCA might have been released from other sources in the area. As Mr. Pels acknowledged, EPA identified on page 30 of the HRS documentation record as proposed, that 1,2-DCA has been used as a fuel additive as well as multiple other uses. Based on this information, EPA considered the possibility that the release of 1,2-DCA came from other sources, and in doing so, identified 12 gas stations in the City of Happy and examined the records for any evidence of fuel spills (also documented on page 30 of the HRS documentation record as proposed). Specifically, EPA examined a TCEQ database of leaking petroleum storage tanks and found no evidence of leakage from tanks in the city (see Reference

14 of the HRS documentation record as proposed). Thus, since EPA could find no evidence of another source of a release of 1,2-DCA, it also had no basis for associating EDB with another source.

Furthermore, Mr. Pels presented no documentation of other sources releasing 1,2-DCA in the vicinity of the City of Happy, or a rationale for why EDB would be associated with other sources of 1,2-DCA if they did exist.

### 3.6 Waste Characteristics/Toxicity

**3.6.1** Comment: Mr. Pels protested the use of EDB toxicity in the scoring of the site. He stated that EPA incorrectly used the EDB toxicity value in its HRS analysis, and that EPA cannot attribute EDB to the site as “there are no facts supporting a nexus of EDB to any release to the Attebury Site” for reasons discussed in section 3.5 of this support document and later in this section of this support document. Mr. Pels stated that for these reasons, CTC is the most reliable constituent upon which to base the HRS score. On the basis of the foregoing, Mr. Pels claimed that “EPA erred and was arbitrary and capricious in selecting the toxicity/mobility (“T/M”) factor for EDB (10,000) in evaluating the waste characteristics of the groundwater pathway for this Site.” He stated, “[t]he only appropriate selection in this instance is the T/M factor for CTC (1,000) given its more widespread prevalence in the wells down-gradient from the Site.” This would produce a “revised Waste Characteristics Factor Value of 18, which consequently results in a reduced HRS score of 18.1908 for the Site, excluding it from NPL consideration.”

Response: The use of the EDB toxicity and mobility in determining the HRS score of the site is consistent with the HRS regulation, whereas the use of the toxicity and mobility of CTC in determining the HRS score of the site, as suggested by the commenter, would be in contradiction to the HRS regulation. HRS Section 3.2, *Waste characteristics*, identified which substances are to be used in this determination. It requires that EPA

[e]valuate only those hazardous substances available to migrate from the sources at the site to ground water. Such hazardous substances include:

- Hazardous substances that meet the criteria for an observed release to groundwater.
- All hazardous substances associated with a source that has a ground water containment factor value greater than 0 (see sections 2.2.2, 2.2.3 and 3.1.2.1).

HRS Sections 3.2.1, *Toxicity/mobility*, 3.2.1.1, *Toxicity*, 3.2.1.2, *Mobility*, and 3.2.1.3, *Calculation of Toxicity/Mobility Factor Value* direct the calculation of toxicity, mobility, and the combined toxicity/mobility factor values to each of the eligible substances. HRS Section 3.2.1.3 directs the scorer to:

Use the hazardous substance with the highest toxicity/mobility factor value for the aquifer being evaluated to assign the value to the toxicity/mobility factor for that aquifer.

Although questioned by Mr. Pels, as discussed in sections 3.3, 3.4 and 3.5 of this support document, EDB is both associated with the site source and is an observed release substance. Two other substances, CTC and 1,2-DCA, are also associated with the source (see pages 16-17

of the HRS documentation record as proposed) and are in one or more observed releases from the site (see page 31 of the HRS documentation record as proposed). That the source has a ground water containment factor value greater than 0 is documented on page 10 of the HRS documentation record as proposed.

As is documented on page 32 of the HRS documentation record as proposed, EDB has a toxicity/mobility factor value of 10,000; CTC has a toxicity/mobility factor value of 1,000; and 1,2-DCA has a toxicity/mobility factor value of 100. Therefore, EPA correctly chose the EDB value as the highest factor toxicity/mobility factor value, and used it when scoring the site. Since CTC has a lower toxicity/mobility value than EDB, to select it, as suggested by the commenter, would have been contrary to the HRS regulation.

**3.6.2** Comment: Mr. Pels stated that EDB's toxicity value was inexplicably used in the HRS Documentation Record to score the Attebury site because EDB was not detected above the reporting limits in the sampling performed during the SSI and therefore was not considered in the SSI analysis.

Response: As explained in section 3.6.1 of this support document, EPA properly used EDB's toxicity value in the scoring of this site. As explained in section 3.5.1 of this support document, EPA is not restricted to information collected as part of a single site investigation when scoring a site. As discussed in sections 3.3, 3.4, and 3.5 of this support document, EDB was found at observed release levels in three ground water samples collected as part of either a 2006 or a 2007 sampling event and in a soil vapor sample taken from the location of the site source in a 2006 sampling event. Therefore, as discussed in Section 3.6.1 of this support document, the HRS requires that EDB be used in assigning the toxicity/mobility factor value for the site.

**3.6.3** Comment: Mr. Pels commented that the November 2007 Sampling Event Summary supports that EDB cannot be used as the default toxicity standard because "GW-21 is *not* considered a background well, converse to what is stated in the Documentation HRS."

Response: As previously discussed in sections 3.4 and 3.5 of this support document, EPA has identified other background wells and EDB can be documented as an observed release substance based on 2006 and November 2007 sampling events. In addition, EDB is associated with the site source. Therefore, as discussed in section 3.6.1 of this support document, the HRS requires EDB be used in assigning the toxicity/mobility factor value for the site.

**3.6.4** Comment: Mr. Pels stated that the November 2007 Sampling Event Summary supports that EDB cannot be used as the default toxicity standard because only two contaminants of concern (COCs) are listed in the report above MCLs: EDB is not listed.

Response: As discussed in section 3.6.1 of this support document, the HRS regulation does not require a substance to be above MCLs to qualify for use in establishing the toxicity/mobility factor for the site. Therefore, EPA's use of EDB in assigning the toxicity/mobility factor value for the site is consistent with the HRS.

**3.6.5** Comment: Mr. Pels stated there was an inconsistency in using the EDB toxicity factor value in scoring the site because EDB was not consistently reported in samples taken during the SSI.

Response: As discussed in section 3.6.1 of this support document, EPA correctly used EDB in assigning the toxicity/mobility factor value for the site based on its association with a site source and its presence in an observed release by chemical analysis to ground water. The HRS

does not require a substance be in multiple samples for it to be considered associated with a source or in an observed release. EDB was correctly associated with the source and established as an observed release substance based on chemical analysis as discussed in section 3.3, and sections 3.4 and 3.5, respectively, of this support document.

- 3.6.6 Comment: Mr. Pels stated there was an inconsistency in using the EDB toxicity factor value in scoring the site because EDB may have come from a different source.

Response: As discussed in section 3.5 of this support document and documented in the HRS documentation record on pages 30-31, the release of EDB is attributable to this site. While Mr. Pels alleged there were other sources contributing to the significant increase in EDB levels, he did not document any other possible sources. Therefore, as explained in section 3.6.1 of this support document, EDB was correctly used in the assigning a toxicity/mobility value for the site. Further, even if EDB were present in other sources, because the EDB contamination is commingled with the CTC releases, the other sources would be considered part of this site.

- 3.6.7 Comment: Mr. Pels stated there was an inconsistency in using the EDB toxicity factor value in scoring the site because EDB's detection and/or linkage to the Site is dubious. Mr. Pels stated that "the EDB was not collected in soil vapor samples from 7-10 foot depth and from 47-52 foot depth at the Attebury Site, but rather was detected closer to groundwater table at 95-100 foot depth." He asserted that even "if EDB were used at the site in 1962, it would likely be closer to the surface."

Response: As discussed in sections 3.3.1 and 3.3.3 of this support document, although EDB was not identified above detection limits in soil vapor samples at depths less than 100 feet, it still was appropriately associated with the site source. Therefore, as discussed in section 3.6.1 of this support document, EDB was appropriately used in assigning the toxicity/mobility factor value for the site.

## 4. Conclusion

The original HRS score for this site was 32.33. Based on the above response to comments, the score remains unchanged. The final scores for the Attebury Grain Storage Facility site are:

Ground Water: 64.67  
Surface Water: Not Scored  
Soil Exposure: Not Scored  
Air Pathway: Not Scored

HRS Score: 32.33