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## Health Consultation

Helena Chemical Company  
602 Holland Avenue  
Mission, Hidalgo County, Texas

EPA Facility ID: TXD980625008

FEBRUARY 1, 2006



### Prepared by

Texas Department of State Health Services  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry



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## Background and Statement of Issues

The United States Environmental Protection Agency (EPA) requested that the Texas Department of State Health Services (DSHS) and the Agency for Toxic Substances and Disease Registry (ATSDR) review pesticide residue data for wipe and wood chip samples collected from the Helena Chemical Company (HCC) facility in Mission, Hidalgo County, Texas. The purpose of this data review was to help identify potential public health concerns regarding future uses of the unoccupied onsite structures.

The HCC facility consists of two adjacent properties previously used (1950-1972) for pesticide formulation. The facility currently includes five structures, which are either empty or filled with abandoned equipment and debris. While the site is located in a predominantly residential area, it is not operational. Under EPA oversight, investigations have been conducted at the site and on adjoining properties. Soil samples from the site and surrounding areas indicated the presence of pesticides [1]. In 1982, the most highly contaminated soil was excavated to a depth of six inches, placed in an onsite repository, and capped with six inches of caliche and one inch of asphalt. No site visit was conducted for this review; based on photographic evidence, access to the site appears to be unrestricted. Only the area around an above ground storage tank (AST) appears to be fenced.

The wipe samples evaluated for this consultation were collected in the onsite buildings during August 23-26, 2005, by URS Operating Services, Inc. Samples were collected from a warehouse (WHS), the North Mixing Plant (NMP), the South Mixing Plant (SMP), and a Shed (SHD). Sample locations and building designations were noted in the URS report [2]. URS collected the wipe samples in accordance with EPA Standard Operating Procedure (SOP) #2011, which states that the sample should be collected using solvent-wetted gauze wiped over a 144-square inch (12"×12") area. Two individual samples and 34 composite (several wipe samples placed together in one sample jar) samples were collected. In addition, two composite wood chip samples were collected from wood beams in the ceilings of the SMP and NMP. The URS report [2] did not describe sampling procedures and protocols used to collect wood chip samples.

## Discussion

Initial wipe sample data were given in parts-per-billion (ppb) rather than micrograms per sample (µg/sample). Through conversations with the EPA On-Scene Coordinator (OSC) and the EPA contractor, this discrepancy was rectified. Ceiling chip data were provided appropriately as ppb. Most results had associated data qualifiers. Results with a "U" qualifier (defined as "the analyte was not detected above the reported detection limit") were dropped from further consideration.

Results with a "J" qualifier (defined as "the associated numerical value is an estimated quantity...presence of the analyte is reliable"), results with no qualifiers, and analytes which were present above the reporting detection limit in both wipe and wood chip samples were retained for further evaluation. The compounds which met these criteria were:

4, 4'-DDE, 4, 4'-DDD, 4, 4'-DDT	alpha-BHC (hexachlorocyclohexane)
dieldrin, endrin	beta-BHC, delta-BHC, gamma-BHC (lindane)
alpha-chlordane, gamma-chlordane	heptachlor, toxaphene

Wipe and wood chip data are shown in Table 1 (adapted from the draft URS report).

Wipe samples can provide qualitative data for presence or absence of chemicals on various surfaces. They can also be used to compare contaminant levels from one location to another. Using the amount of a chemical found on a surface alone to estimate plausible exposure doses is very difficult because it requires converting wipe measurements reported as  $\mu\text{g}$  per sample to potential exposure doses expressed as  $\mu\text{g}$  per kg-body weight per day. The most significant limitation is that it greatly overestimates the exposure dose. This is because one has to make several very conservative assumptions about the amount of chemical found in  $100\text{ cm}^2$  (about  $4\text{ in}^2$ ) of a given surface. These assumptions include: 1) that the sample is typical of the entire room, 2) the amount of chemical found is completely ingested (or otherwise absorbed) on a daily basis by an adult or child for the appropriate duration (i.e., acute, intermediate, chronic), and 3) the contaminant transfers completely from the hand into the digestive system followed by 100 % absorption in the gut.

For this site, making all these assumptions is too conservative to be meaningful. The site is currently abandoned and the most likely current exposure scenario for the public is to people trespassing on the site. Assessing future public health implications requires formulating plausible exposure scenarios which would be driven by likely future uses. Depending on the use, the potentially exposed population could include office workers, children at a day care facility or people repairing or restoring automobiles or furniture. The routes of exposure could include direct ingestion, dermal absorption, or inhalation. The frequency of exposure could be daily or something less. Other factors include volatility of the chemicals, other properties specific to each chemical, and the cleanup or containment actions conducted prior to reuse of the buildings.

Assessing the potential public health implications of the wood chip sample results also are problematic; however, since the highest concentrations were found in the SMP ceiling, the presence of a direct route of exposure to future building occupants is unlikely, particularly if the pesticides are adsorbed to the wood.

## Conclusions

- Current exposures to the public are limited to trespassers because the buildings are abandoned but site access is not restricted. Trespassers may be exposed to hazardous chemicals and physical hazards. Because wipe and wood chip sample results could not be reliably converted to plausible exposure doses, we could not reasonably determine current health risks. The extent to which the buildings may pose a future public health hazard depends on the ultimate use and any remedial actions taken. Based on these considerations, we have classified this site as an **indeterminate public health hazard**.
- Current exposure to the chemicals found in the ceiling beams is considered unlikely. The chemicals found in the ceiling beams currently pose **no apparent public health hazard to occasional occupants**. The extent to which the buildings may pose a future public health hazard depends on the ultimate use and any remedial actions taken. We consider future exposures an **indeterminate public health hazard**.

- Demolition of the buildings without effective containment and waste control measures could increase the risk for contaminants to become airborne and more available for inhalation. Data were insufficient to evaluate this exposure pathway it is classified as an **indeterminate public health hazard**.

## Recommendations

- Prudent public health practice should include considering remediation or containment alternatives prior to occupancy.
- If the buildings are demolished, precautions, such as air quality monitoring, proper PPE, and dust suppression, should be taken to ensure that both workers and people in the surrounding communities are not exposed to contaminants.

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## References

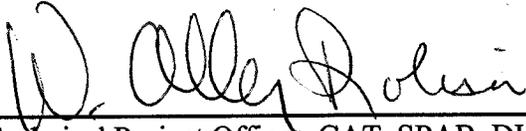
1. USEPA. 2005. Fact Sheet: Helena Chemical Company Site, Mission, Hidalgo County, Texas. August 2005
2. URS Operating Services, Inc. 2005. Helena Chemical Company – SAR Draft. December 2005.

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**Certification**

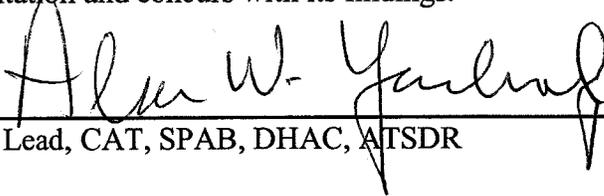
This public health consultation was prepared by the Texas Department of State Health Services (DSHS) under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.



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Technical Project Officer, CAT, SPAB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with its findings.



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Team Lead, CAT, SPAB, DHAC, ATSDR



**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-NMP-NW-1 North mixing plant North wall	HC-WP-NMP-NW-02 North mixing plant North wall	HC-WP-NMP-SW-1 North mixing plant South wall	HC-WP-NMP-SW-2 North mixing plant South wall	HC-WP-NMP-EW-1 North mixing plant East wall
<b>Analyte</b>					
Alpha-BHC	¥	¥	¥	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	¥	¥	¥	¥
Delta-BHC	¥	¥	¥	¥	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	¥
Alpha-Chlordane	¥	¥	¥	¥	¥
4,4'-DDE	0.79 J	0.94	0.42	1.2	0.87 J
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	¥
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	0.61 J	0.68	0.21 J	0.81 J	0.52 J
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	4.4	5	1.9	5	4.1
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

¥ = The analyte was not detected above the reported detection limit.

J = The associated numerical value is an estimated quantity because quality control criteria were not met. Presence of the analyte is reliable.

*\*Adapted from the URS Operating Services Inc. Helena Chemical Company SAR Draft, December 2005.*



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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-NMP-EW-2 North mixing plant East wall	HC-WP-NMP-EW-3 North mixing plant East wall	HC-WP-NMP-WW-01 North mixing plant West wall	HC-WP-NMP-WW-02 North mixing plant West wall	HC-WP-NMP-WW-02R North mixing plant West wall
<b>Analyte</b>					
Alpha-BHC	¥	¥	2.5 J	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	¥	¥	¥	¥
Delta-BHC	¥	¥	3.2 J	2.6 J	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	¥
Alpha-Chlordane	¥	¥	¥	¥	¥
4,4'-DDE	0.9 J	0.86 J	2.2 J	2.2 J	1 J
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	¥
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	0.5 J	0.51 J	4.3 J	4.2 J	0.91 J
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	4	4.5	23	25	5.4
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

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R = Replicate sample

*\*Adapted from the URS Operating Services Inc. Helena Chemical Company SAR Draft, December 2005.*



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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-NMP-WW-03 North mixing plant West wall	HC-WP-NMP-FLR-01 North mixing plant Floor	HC-WP-NMP-FLR-02 North mixing plant Floor	HC-WP-NMP-FLR-03 North mixing plant Floor	HC-WP-NMP-FLR-04 North mixing plant Floor
<b>Analyte</b>					
Alpha-BHC	¥	¥	¥	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	¥	¥	¥	¥
Delta-BHC	¥	¥	¥	¥	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	¥
Alpha-Chlordane	¥	¥	¥	¥	¥
4,4'-DDE	4.3 J	62	18	86	76
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	10	5.6	¥	¥
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	7.7	¥	6	7.3 J	17
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	26	81	39	54	110
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

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*\*Adapted from the URS Operating Services Inc. Helena Chemical Company SAR Draft, December 2005.*



**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-NMP-FLR-05 North mixing plant Floor	HC-WP-NMP-FLR-06 North mixing plant Floor	HC-WP-NMP-CLN-01 North mixing plant Ceiling	HC-WP-NMP-TER-1 North mixing plant Upper terrace	HC-WP-SMP-NW-01 South mixing plant North wall
<b>Analyte</b>					
Alpha-BHC	¥	¥	460 J	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	¥	¥	¥	¥
Delta-BHC	¥	¥	870 J	4 U	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	67
Alpha-Chlordane	¥	¥	¥	¥	8.6 J
4,4'-DDE	60	110	1100	200	12 J
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	12 J
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	13	24 J	1700	71	21
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	100	160	9000	300	100
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-SMP-NW-02 South mixing plant North wall	HC-WP-SMP-SW-01 South mixing plant South wall	HC-WP-SMP-SW-02 South mixing plant South wall	HC-WP-SMP-EW-01 South mixing plant East wall	HC-WP-SMP-WW-01 South mixing plant West wall
<b>Analyte</b>					
Alpha-BHC	¥	¥	¥	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	¥	¥	¥	¥
Delta-BHC	¥	¥	¥	¥	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	¥
Alpha-Chlordane	¥	¥	¥	¥	¥
4,4'-DDE	4.1 J	3	4.7 J	1.8 J	3.5 J
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	¥
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	4.7 J	3.4	4.4 J	1.8 J	3.5 J
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	27	25	38	11	22
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-SMP-FLR-01 South mixing plant Floor	HC-WP-SMP-FLR-01R South mixing plant Floor	HC-WP-SMP-FLR-02 South mixing plant Floor	HC-WP-SMP-CLN-01 South mixing plant Ceiling µg/kg	HC-WP-SMP-DCK-01 South mixing plant Exterior dock
<b>Analyte</b>					
Alpha-BHC	¥	¥	¥	2400 J	¥
Gamma-BHC (Lindane)	¥	¥	¥	2300 J	¥
Beta-BHC	¥	¥	¥	1600 J	¥
Delta-BHC	¥	¥	¥	4900 J	¥
Heptachlor	¥	¥	¥	250 J	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	¥	¥	¥	¥	3.4
Alpha-Chlordane	¥	¥	¥	¥	¥
4,4'-DDE	31	20	32	1800 J	18
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	2.2
Endrin	¥	¥	¥	¥	7.2
4,4'-DDD	19 J	14	17 J	7100	2.1
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	140	98	120	35000	8.2
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	39000 J	¥

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R = Replicate sample

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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-SMP-DCK-02 South mixing plant Exterior dock	HC-WP-WHS-NW-01 Warehouse North wall	HC-WP-WHS-SW-01 Warehouse South wall	HC-WP-WHS-EW-01 Warehouse East wall	HC-WP-WHS-WW-01 Warehouse West wall
<b>Analyte</b>					
Alpha-BHC	¥	¥	¥	¥	¥
Gamma-BHC (Lindane)	¥	¥	¥	¥	¥
Beta-BHC	¥	1.5 J	0.64 J	¥	5.8
Delta-BHC	0.31 J	¥	¥	¥	¥
Heptachlor	¥	¥	¥	¥	¥
Aldrin	¥	¥	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥	¥	¥
Gamma-Chlordane	0.74	¥	¥	¥	¥
Alpha-Chlordane	0.055 J	¥	¥	¥	¥
4,4'-DDE	0.55	3.6	3.5	3.9	37
Endosulfan I	¥	¥	¥	¥	¥
Dieldrin	¥	¥	¥	¥	¥
Endrin	¥	¥	¥	¥	¥
4,4'-DDD	0.66	2.3	1.3	1.1	6
Endosulfan II	¥	¥	¥	¥	¥
4,4'-DDT	3	8	5.8	6	29
Endrin Aldehyde	¥	¥	¥	¥	¥
Methoxychlor	¥	¥	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥	¥	¥
Endrin Ketone	¥	¥	¥	¥	¥
Toxaphene	¥	¥	¥	¥	¥

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**Table 1. Wipe and Wood Chip Sample Data, August 23-26, 2005 (Continued)**

Organochlorine Pesticide Analytical Summary  
Interior Wipe Samples---Concentrations in µg/sample unless noted

Sample ID#: Location:	HC-WP-WHS-FLR-01 Warehouse Floor	HC-WP-WHS-CLN-01 Warehouse Ceiling µg/kg	HC-WP-SHD-1 Shed All walls, floor, ceiling
<b>Analyte</b>			
Alpha-BHC	¥	¥	1.1 J
Gamma-BHC (Lindane)	¥	¥	¥
Beta-BHC	¥	¥	¥
Delta-BHC	¥	0.032 J	1.3 J
Heptachlor	¥	¥	¥
Aldrin	¥	¥	¥
Heptachlor Epoxide	¥	¥	¥
Gamma-Chlordane	¥	¥	¥
Alpha-Chlordane	¥	¥	¥
4,4'-DDE	63	0.19	4.9
Endosulfan I	¥	¥	¥
Dieldrin	¥	¥	¥
Endrin	¥	¥	¥
4,4'-DDD	21	0.062	2.3
Endosulfan II	¥	¥	¥
4,4'-DDT	80	0.62	12
Endrin Aldehyde	¥	¥	¥
Methoxychlor	¥	¥	¥
Endosulfan Sulfate	¥	¥	¥
Endrin Ketone	¥	¥	¥
Toxaphene	¥	¥	¥

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