U.S. ENVIRONMENTAL PROTECTION AGENCY POLLUTION/SITUATION REPORT Cincinnati Malathion Site - Removal Polrep Initial and Final Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Region V

Subject: POLREP #1

Initial and Final POLREP Cincinnati Malathion Site

B5Y.

Cincinnati, OH

Latitude: 39.1061352 Longitude: -84.5547681

To:

From: Steven Renninger, On-Scene Coordinator

Date: 4/10/2012

Reporting Period: June 14, 2010 through April 3, 2012

1. Introduction

1.1 Background

Site Number: B5YJ Contract Number: D.O. Number: Action Memo Date:

Response Authority: CERCLA Response Type: Time-Critical Response Lead: EPA Incident Category: Removal Action

NPL Status: Non NPL Operable Unit:

Mobilization Date: Start Date: 6/14/2010

Demob Date: Completion Date: 4/3/2012

CERCLIS ID: RCRIS ID:

ERNS No.: State Notification: ODA notified

FPN#: Reimbursable Account #:

1.1.1 Incident Category

Emergency Response

1.1.2 Site Description

The Cincinnati Malathion (CM) Site is a duplex rental property that was illegally sprayed with a pesticide (containing malathion) to exterminate a chronic bedbug problem. A total of five of the nine tenants in both rental units showed symptoms of malathion exposure and were taken to various local hospitals for treatment. The tenants have since vacated the property.

1.1.2.1 Location

The CM Site is located at 2352-2354 Warsaw Avenue, in a neighborhood called Price Hill, located just west of downtown Cincinnati, Ohio. The geographical coordinates of the site are 39° 6' 17.172" North Latitude and 84° 33' 15.876" West Longitude.

1.1.2.2 Description of Threat

In an attempt to control a serious bedbug problem, the owner of a duplex rental property located at 2352-2354 Warsaw Avenue in Cincinnati, Ohio hired an unlicensed applicator (UA) to spray a pesticide in both rental units to exterminate the bedbug problem.

The UA purchased an insect spray from a national hardware store called "Spectracide." The insect spray contained 50% Malathion and was labeled as only to be used in outdoor applications.

On June 2, 2010, the UA sprayed the rental units in the morning and again in the late afternoon. Later that evening, a few of the tenants in 2352 Warsaw Avenue began showing symptoms, such as headaches, lightheadedness, nausea and severe diarrhea. The tenants in 2352 Warsaw Avenue compose of 3 adults and 4 children (6-years old and younger). In addition, the tenants in 2354 Warsaw Avenue also began showing symptoms, such as diarrhea, nausea, vomiting, headaches, sweating and muscle fatigue. The tenants in 2354 Warsaw Avenue compose of 2 adults.

On June 3, 2010, the UA again sprayed both rental units in the morning and again in the late afternoon.

On June 4, 2010, the UA sprayed both rental units once in the morning. Later that evening, an adult in 2352 Warsaw Avenue began showing symptoms. Calls were made to the pesticide manufacturer and the manufacturer told the tenants that they should go to the hospital. The tenants then went to Mercy Hospital, Children's Hospital or University Hospital for treatment. Five of the tenants received 2-PAM4 shots.

On June 7, 2010, the City of Cincinnati Fire Department (CFD) submitted a restraining order against the UA.

On June 8, 2010, the CFD issued an official "Vacate Order" against the Warsaw duplex property. The tenants from the two units vacated the property and relocated to relatives homes.

On June 9, 2010, the City of Cincinnati Health Department (CHD) posted the Warsaw property as "Unfit for Human Habitation." The City of Cincinnati Police Department officially taped off the two contaminated units to prevent/prohibit the removal of any items from the occupied units, at the request of U.S. EPA and the Ohio Department of Agriculture (ODA) Criminal Investigations Unit.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

On June 4, 2010, the ODA mobilized to the site, stopped the UA from applying the second round of spraying in the evening and collected seven swab samples to determine the pesticide that was used at the property. The swab samples were analyzed by the ODA Laboratory located in Reynoldsburg, Ohio.

Analytical results showed the following malathion concentrations:

- Single Mattress in the Upper East Bedroom (2352 Warsaw) 472.8 micrograms (μg)
- Baby Mattress in the Upper East Bedroom (2352 Warsaw) 581.1 μg
- Mattress in the Upper West Room (2352 Warsaw) 536.95 μg
- Couch Cushion in the Living Room (2352 Warsaw) 40.7 µg
- Mattress in the Lower Room (2354 Warsaw) 30.8 μg
- Table top in the Living Room (2354 Warsaw) 7,846.6 μg
- Living Room sofa cushion (2354 Warsaw) 1,165.5 μg

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

On June 10, 2010, the ODA and CHD requested U.S. EPA assistance to conduct air and wipe sampling to determine the extent of malathion contamination inside the rental property and to assist coordinating the decontamination of the malathion-contaminated property to prevent the pesticide contamination to spread to additional locations or the environment.

2.1.2 Response Actions to Date

On June 14, 2010, at 1030 hours, a meeting was conducted at the CHD to discuss the illegal spraying of malathion in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, the Agency for Toxic Substances and Disease Registry (ATSDR), ODA, Ohio Department of Health (ODH), CHD and the City of Cincinnati attended the meeting in person or via conference call.

ODA stated that it not only collected swab samples on June 4, 2010, but also met with the UA and collected a sample of what he sprayed in the Warsaw property. The UA stated that he mixed the "Spectracide" with water into a 4-gallon sprayer prior. The UA stated that he also sprayed his own property (located on Carson Avenue) as well as a 4-unit property (currently vacant and boarded up) located on Grand Avenue. ODA stated that malathion is a Class 8C Poison.

At 1130 hours, the owner of the Warsaw property and his property manager joined the meeting. U.S. EPA and ODA explained the ODA swab sample results to date and explained that the property was contaminated with malathion. U.S. EPA explained to the owner that everyone (federal, state, local representatives) attending the meeting would like him to address the following items at the next project meeting to be held on June 17, 2010:

- 1) Keep the property posted as "Unfit for Human Habitation"
- 2) Hire a contractor to properly remove and dispose of malathion-contaminated items
- 3) Provide a work plan to agencies
- 4) Update the project team on what he is doing to assist his tenants
- 5) Grant ODA and U.S. EPA permission to collect more samples
- 6) Update the project team on his insurance coverage

On June 17, 2010, at 1000 hours, a meeting was conducted at the CHD to discuss the illegal spraying of Malathion in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, ATSDR, ODA, CHD, the City of Cincinnati, the property owner and the property manager attended the meeting in person or via conference call.

The owner indicated that his property insurance did not cover decontaminating the property. He indicated that the property was still posted as "Unfit for Human Habitation." He indicated that he did not have the funds to hire a contractor.

The property owner signed an access agreement provided by U.S. EPA to allow U.S. EPA and its contractors and ODA personnel access to conduct air sampling and additional wipe sampling to determine if there is Malathion contamination on nonporous items, such as walls, baseboards, wood sub-floor, appliances, etc.

The next meeting was scheduled for June 28, 2010 at 10am.

PRE-DECONTAMINATION AIR SAMPLING

On June 24, 2010, U.S. EPA and U.S. EPA's START contractor began the environmental characterization of the interiors of the two units of the duplex. START collected six Polyurethane Foam (PUF) sorbent tube air samples and two summa canister air samples from the rental property. A PUF air sample was collected from each of the three floors in each of the rental units. An ambient air sample was also collected from the deck off of one of the rental units. In addition, to check for the presence of volatile organic compounds (VOCs), START collected one summa canister indoor air sample from each of the rental units. All of the air samples were collected over an 8-hour sample period, per the instructions of ATSDR. The summa canisters were analyzed using EPA Method TO-15.

Analytical results for malathion from the seven PUF air samples were as follows:

- 2352 Warsaw Basement 4.46 micrograms per cubic meter (μg/m³)
- 2352 Warsaw 1st floor Living Room 5.57 μg/m³
- 2352 Warsaw 2nd floor Kid's Bedroom 24.58 μg/m³
- 2354 Warsaw Basement 3.74 μg/m³
- 2354 Warsaw 1st floor Living Room 6.64 μg/m³
- 2354 Warsaw 2nd floor Master Bedroom 9.63 μg/m³
- Ambient non detect

ATSDR established the following malathion indoor air action level --> 20 µg/m³

The indoor air sample in the 2nd floor Kid's Bedroom (24.58 μ g/m³) in 2352 Warsaw was the only air sample which showed a malathion concentration greater than the ATSDR malathion indoor air action level of 20 μ g/m³. Isomalathion and the malathion oxygen analog were also analyzed, but were not detected in any of the PUF air samples.

The air results from the two summa canisters were reviewed by ATSDR and did not show any elevated VOCs of concern in the indoor air.

On June 28, 2010, a meeting was conducted at the CHD to discuss the illegal spraying of Malathion in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, ATSDR, ODA, ODH, CHD and the City of Cincinnati attended the meeting in person or via conference call. A review of the air sampling results was conducted. U.S. EPA and ODA recommended wipe sampling to determine the extent of malathion contamination. ODA requested EPA START assistance in collecting the wipe samples. ODA stated that they would obtain custody of the wipe samples following collection and would transport the wipe samples to its laboratory for analysis.

PRE-DECONTAMINATION WIPE SAMPLING

To determine the extent of malathion contamination within each of the duplex units, on June 30, 2010, START mobilized two 2-person sampling teams and entered the property in Level C PPE with APRs and/or PAPRs. START collected 23 wipe samples from 2352 Warsaw and 17 wipe samples from 2354 Warsaw. The wipe samples, charging agent (acetone) and 100cm^2 template were supplied by the ODA. The wipe samples were collected from baseboards, walls (2-feet above baseboards and 5-feet above baseboards), countertops, appliances, and hardwood or linoleum flooring.

The wipe sample analytical results from 2352 Warsaw showed malathion detections in 9 of the 23 wipe samples collected, with a high malathion concentration of 8.16 micrograms per 100 square centimeters ($\mu g/100 cm^2$).

The wipe sample analytical results from 2354 Warsaw showed malathion detections in 10 of the 17 wipe samples collected, with a high malathion concentration of $56.3~\mu g/100cm^2$. ATSDR established a wipe sample malathion action level of $\mu g/100cm^2$. The only wipe sample that showed a malathion concentration greater than the $15~\mu g/100cm^2$ action level was collected from a 2nd floor bedroom wood threshold than separated the carpet between rooms. Isomalathion and the malathion oxygen analog were also analyzed in each wipe sample. Isomalathion was detected in only one wipe sample (the wipe sample that exceeded the malathion action level) at $1.61~\mu g/100cm^2$. The malathion oxygen analog was not detected in any wipe sample.

On July 15, 2010, a meeting was conducted at the CHD to discuss the illegal spraying of Malathion in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, ATSDR, ODA, ODH, CHD and the City of Cincinnati attended the meeting in person or via conference call.

ODA stated that both units have been burglarized and that the owner failed to board up the property.

ODA, CHD and U.S. EPA Pesticide Division requested the owner re-key all of the locks and to board up the property.

ODA also stated that it investigated whether the UA sprayed a 4-unit apartment complex. Upon conducting a site investigation of the apartment complex, it did not appear the UA conducted any spraying. ODA also attempted to get access to the property where the UA resides, but was unsuccessful at obtaining access.

On July 23, 2010, a meeting was conducted at the CHD to discuss the illegal spraying of Malathion in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, ATSDR, ODA, ODH, CHD, the City of Cincinnati and the property owner attended the meeting in person or via conference call. U.S. EPA

explained the air and wipe sampling results to date to the property owner. U.S. EPA outlined a decontamination strategy to the owner that involved hiring an environmental contractor to remove all porous items (ie, carpet, clothes, couches and mattresses) from each unit and to properly dispose. In addition, U.S. EPA requested that the contractor wipe down all non-porous items (ie, appliances, tables, flooring, countertops) with a decontamination solution. The owner stated that he would obtain quotes from local contractors.

On July 28, 2010, the owner hired Environmental Enterprises Incorporated (EEI) to conduct the work. EEI filled three 20-cubic yard rolloff boxes with malathion-contaminated items and sprayed and wiped down all non-porous items in each duplex with a bleach solution. Oversight of removal and decontamination activities was conducted by U.S. EPA START.

POST-DECONTAMINATION AIR SAMPLING

On July 29, 2010, START mobilized to the Site and collected three post-decontamination PUF air samples from each unit, including an ambient air sample. The PUF air samples were collected over an 8-hr time period.

Analytical results for malathion from the seven PUF air samples were as follows:

- 2352 Warsaw Basement 1.37 μg/m³
- 2352 Warsaw 1st floor Living Room 0.648 μg/m³
- 2352 Warsaw 2nd floor Kid's Bedroom 2.874 μg/m³
- 2354 Warsaw Basement 1.931 μg/m³
- 2354 Warsaw 1st floor Living Room 2.074 μg/m³
- 2354 Warsaw 2nd floor Master Bedroom 0.846 μg/m³
- Ambient non detect

ATSDR established the following malathion indoor air action level --> 20 µg/m³

None of the PUF air samples showed malathion detections greater than the ATSDR malathion indoor air action level. The air samples were also analyzed for isomalathion and the malathion oxygen analog. All seven PUF air samples showed not detect for both analytes.

POST-DECONTAMINATION WIPE SAMPLES

On July 29, 2010, START collected 3 post-decontamination wipe samples from 2352 Warsaw and 3 post-decontamination wipe samples from 2354 Warsaw.

Post decontamination wipe sample analytical results showed the following:

- 2352 Warsaw Master Bedroom (floor sample) --> Malathion = 262.5 μg/100cm²; Isomalathion = 1.35 μg/100cm² and the Malathion Oxygen Analog = 24.85 μg/100cm²
- 2352 Warsaw Living Room (baseboard sample) --> Malathion = 64.1 μg/100cm²; Isomalathion = non detect and the Malathion Oxygen Analog = 0.696 μg/100cm²
- 2352 Warsaw Master Bedroom (baseboard sample) --> Malathion = 371 μg/100cm²; Isomalathion = 18.1 μg/100cm² and the Malathion Oxygen Analog = 11 μg/100cm²
- 2354 Warsaw Bedroom #2 (floor) --> Malathion = not detected; Isomalathion = not detected and the Malathion Oxygen Analog = not detected
- 2354 Warsaw Bedroom #2 (wood threshold) --> Malathion = 445.5 μg/100cm²; Isomalathion = 14.35 μg/100cm² and the Malathion Oxygen Analog = 4.56 μg/100cm²
- 2354 Warsaw Living Room (high traffic area sample) --> Malathion = 215 μg/100cm²; Isomalathion = 61.4 μg/100cm² and the Malathion Oxygen Analog = 9.37 μg/100cm²

Post decontamination wipe samples showed elevated malathion concentrations and detectable isomalation and malathion oxygen analog concentrations in each apartment. ODA believed that the use of bleach as the decontamination agent by the property owner's environmental contractor (EEI) did not thoroughly clean the non-porous items in each unit and may also have broken down the malathion into isomalathion and the malathion oxygen analog.

On August 4, 2010, a meeting was conducted at the CHD to discuss the decontamination activities and the post decontamination sample results in the duplex property. Members from U.S. EPA, U.S. EPA Pesticide Division, ATSDR, ODA, ODH, CHD, and the City of Cincinnati attended the meeting in person or via conference call.

The post-decontamination wipe sampling results showed that malathion still existed at the property. U.S. EPA, U.S. EPA Pesticide, ODA and CHD requested additional decontamination by the property owner. The property owner stated that he did not have the funds to pay for the additional cleaning and that he wanted to begin renovating the property as soon as possible. The property owner completed the following activities at 2354 Warsaw:

- 1. Apply polyurethane to baseboards from areas where contaminated carpeting was previously removed.
- 2. Apply polyurethane to floor areas where contaminated carpeting was previously removed.
- 3. Install a new layer of plywood over floor areas where contaminated carpeting was previously removed.
- 4. Remove wooden threshold on second floor of 2354 Warsaw.

In October 2010, the property owner completed the extra work in 2354 Warsaw. He indicated that both properties had been broken into and he did not know when he would be able to begin work in 2352 Warsaw.

On November 29, 2010, the CHD contacted the property owner and stated that the "Unfit for Human Habitation" posting had been lifted from 2354 Warsaw and that it could be reoccupied.

In July 2011, the property owner still had not completed the extra work in 2354 Warsaw. OSC Renninger subsequently contacted U.S. EPA's National Decontamination Team (NDT) to see if it could use 2354 Warsaw as a research project to evaluate decontamination agents and methods for malathion contamination.

BASELINE SAMPLING AFTER 1-YEAR - U.S. EPA NDT

In August 2011, NDT and U.S. EPA's START contractor collected 10 wipe samples to determine if residual malathion contamination was present after a year since the property owner decontaminated 2352 Warsaw with bleach solution. The results of the sampling showed 2 of the 10 wipe samples with malathion concentrations exceeding the 15 µg/100cm² action level, with a high malathion concentration of 77.5 µg/100cm² in the living room baseboards.

The results proved that after a year since bleach was used (by yhe property owners contractor) to decontaminate the property, malathion concentrations still existed above the action level on site at 2352 Warsaw (still posted and unoccupied).

PRE-STERILEX DECONTAMINATION SAMPLING - U.S. EPA NDT

In October 2011, NDT used the Visual Sampling Program (VSP) to determine the sampling locations and to develop a sampling strategy for characterizing 2352 Warsaw prior to decontaminating. On October 26, 2011, NDT and START collected a total of 34 wipe samples were collected. The results of the sampling showed malathion concentrations exceeding the 15 μ g/100cm² action level in 9 of the 34 wipes samples, with an elevated malathion concentration of 67.6 μ g/100cm².

DECONTAMINATION SOLUTION EVALUATION

One of the goals of the NDT study was to identify an appropriate decontamination agent that was commercially available which had been tested for efficacy against organophosphates, that was easy to use and cost effective. While a variety of decontamination agents were considered, the decon agent that was selected for the following reasons:

- 1) it was commercially available;
- 2) it was a liquid which could be sprayed; and
- 3) the decontamination efficacy had been evaluated for organophosphate pesticides

U.S. EPA NDT DECONTAMINATION AND POST-DECONTAMINATION WIPE SAMPLING

On October 1, 2011, 2352 Warsaw was decontaminated using a commercially available decontamination solution by NDT. Gross decon included removing small pieces of carpet remnants, dirt and debris. Decontamination procedures included: mixing 12.8 oz Solution 1 + 12.8 oz Activator with up to 1 gallon of tap water. The decon solution was sprayed on walls/baseboards (pre-soak). Walls and baseboards were scrubbed with a brush followed by a 10 minute retention then a rinse with water. Excess water was removed with a Shop Vac

Post-decontamination surface wipe sampling was conducted on November 3, 2011, by U.S. EPA NDT and START. Sample analyses was provided by ODA. A total of 33 floor, wall and baseboard surface wipe samples were collected. A total of 1 of the 33 wipe samples showed a malathion concentration greater than the ATSDR wipe sampling action level of 15 $\mu g/100~cm^2$, with a malathion concentration of 36 $\mu g/100~cm^2$. Analytical results showed that the master bedroom was effectively decontaminated to below the ATSDR wipe sampling action level. However, one judgmental sample collected to confirm the basement was "clean" came back above the action level (36 $\mu g/100~cm^2$). The basement was spot decontaminated a second time on February 8, 2012, and wipe sampling results showed a wipe sample collected from a baseboard in the basement having a malathion concentration of 250 $\mu g/100~cm^2$. The basement was spot decontaminated a third time on March 8, 2012, and wipe sampling results showed two wipe samples collected from the basement baseboards with malathion concentrations less than the ATSDR wipe sampling action level of 15 $\mu g/100~cm^2$.

CONCLUSION OF THE U.S. NDT STUDY

The use of commercial bleach (as utilized by the owner's contractor) as a decontamination solution for malathion-contaminated properties does not appear to be effective. The use of a commercially available decontamination solution was effective for malathion-contaminated properties at this site.

On April 3, 2012, U.S. EPA NDT informed the CHD, ODA and the property owner that the study was completed and post decontamination sample results confirmed that all wipe samples are below the ATSDR malathion action level.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The property owner, property manager and UA have been identified by U.S. EPA.

2.1.4 Progress Metrics

| R5 Priorities Summary | | | | | | | |
|---|---|-----|----|--|--|--|--|
| | Miles of river systems cleaned and/or restored | N/A | | | | | |
| This is an Integrated River Assessment. The numbers should overlap. | Cubic yards of contaminated sediments removed and/or capped | N/A | | | | | |
| | Gallons of oil/water recovered | N/A | | | | | |
| | Acres of soil/sediment cleaned up in floodplains and riverbanks | N/A | | | | | |
| Stand Alone Assessment | Acres Protected | | 1 | | | | |
| | Number of contaminated residential yards cleaned up | N/A | | | | | |
| | Human Health Exposures Avoided | | 15 | | | | |
| | Number of workers on site | | 3 | | | | |

| Waste Stream | Medium | Quantity | Manifest # | Treatment | Disposal |
|-------------------------|--------|--------------------|---------------|-----------|---|
| Non-hazardous debris | Solid | 3 rolloff boxes | | Landfill | Rumpke Landfill Cincinnati, OH |
| | | | | | |
| | | | | | |

2.2 Planning Section

2.2.1 Anticipated Activities

None.

2.2.1.1 Planned Response Activities

None.

2.2.1.2 Next Steps

The Cincinnati Health Department has been contacted with final sample results and may elect to remove posting from the duplex.

2.2.2 Issues

The U.S. EPA NDT study concluded that the use of a commercially available decontamination solution effectively decontaminated the malathion-contaminated property.

2.3 Logistics Section

- 1) When initially relocated, the two Warsaw property families lived with relatives.
- 2) The American Red Cross provided some assistance to the families, including food, clothing and a small perdiem.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

Baseline Air Sampling - START

Air sampling was collected in Level C personal protective equipment (PPE) with powered-air purifying respirators (PAPRs).

Baseline Wipe Sampling - START

Wipe sampling being collected in Level C PPE with either PAPRs and air purifying respirators (APRs).

Building Decontamination

The building decontamination being conducted in Level C PPE with APRs.

NDT Wipe Sampling and Decontamination

Both activities conducted in Level D PPE.

2.6 Liaison Officer

1) The CHD was the official liason with the tenants who were exposed to the illegal application of malathion. The CHD periodically checked in on the tenants to determine immediate needs and concerns.

2.7 Information Officer

2.7.1 Public Information Officer

2.7.2 Community Involvement Coordinator

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

U.S. EPA National Decontamination Team
U.S. EPA Pesticide Division
Agency for Toxic Substances and Disease Registry
Ohio Department of Agriculture
Cincinnati Health Department
Cincinnati Fire Department
City of Cincinnati

4. Personnel On Site

U.S. EPA OSC WESTON START ODA U.S. EPA NDT

5. Definition of Terms

No information available at this time.

6. Additional sources of information

6.1 Internet location of additional information/report

For additional information, please refer to the "Documents" Section of the project website http://www.epaosc.org/.

6.2 Reporting Schedule

This is the only POLREP issued for this project.

7. Situational Reference Materials

No information available at this time.