Thursday, March 19, 2015

Ray Gosack
City Administrator, City of Fort Smith, Arkansas
623 Garrison Ave
3rd Floor, Room 315
Fort Smith, AR 72901

*Via Electronic Mail*

**RE: RESULTS OF GROUNDWATER AND SOIL VAPOR SAMPLING**

Dear Mr. Gosack,

Whirlpool Corporation met with three Fort Smith property owners on Tuesday, March 17, 2015 to formally convey the results of the shallow soil vapor and groundwater sampling conducted by Whirlpool on their properties on January 19 and 20, 2015.

The results of the testing found that the presence of trichloroethylene (TCE) in groundwater beneath the properties does not pose a threat to human health.

Groundwater and soil vapor samples were collected at five locations as part of an ongoing assessment of TCE groundwater impacts related to the Whirlpool property, with the overall assessment and groundwater cleanup being conducted under the supervision of the Arkansas Department of Environmental Quality (ADEQ). Two of the sampling locations were on property owned by Whirlpool. The other three sampling locations were on properties whose owners allowed Whirlpool access to conduct the sampling. Out of respect for the privacy of these property owners, we are not publicly releasing the addresses of the private properties where the sampling took place.

Each property owner who allowed access to their property for testing has been provided the results of soil vapor and groundwater sampling, as well as the estimated indoor air concentrations based on this data. The modeled indoor air concentration results were between 0.01 micrograms per cubic meter ($\mu g/m^3$) and 1.16 $\mu g/m^3$, below the U.S. Environmental Protection Agency (USEPA) interim residential indoor action level of 2 $\mu g/m^3$. Measurement of the concentration of a substance in air is typically reported in micrograms per cubic meter. A microgram is 1/1,000,000th of a gram, or approximately 2 trillionths of a pound.

These estimates were calculated using a widely-accepted modeling process employed and approved by regulatory agencies around the country, including the USEPA. Even using the very conservative assumptions required by ADEQ, the modeling results were below the health risk thresholds set by ADEQ.

Attached please find a copy of the results submitted to ADEQ following our meetings with the property owners.

Whirlpool plans to continue to perform periodic sampling of groundwater and soil vapor at these properties in accordance with ADEQ protocols. Additionally, Whirlpool has offered to

perform supplemental crawl space and indoor air sampling on properties at the owner's request.

Whirlpool Corporation remains committed to working closely with the City, ADEQ, and residents until this issue is resolved. We will keep the City and area residents informed through updates on WhirlpoolFortSmith.com as monitoring and remediation efforts continue over the coming months.

Sincerely,

Jeff Noel, VP, Whirlpool Corporation

March 19, 2015

Ms. Tammie Hynum
Chief Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

**Re: Offsite Soil Vapor Monitoring Results**
**Whirlpool Corporation**
**Fort Smith, Arkansas**
**EPA No. ARD042755389**
**AFIN No. 66-00048**
**CAO LIS 13-202**

Dear Ms. Hynum:

This correspondence summarizes the results of the shallow soil vapor sampling conducted by Whirlpool at offsite residential properties in January 2015. Soil vapor and shallow groundwater monitoring has been performed at five properties consisting of three separate residential properties (identified as Parcel's #1 through #3 on Figure 1), a Whirlpool property on Jacobs Avenue, and the Whirlpool property containing the former manufacturing building.

Letters communicating the soil vapor and shallow groundwater results were provided to each of the respective offsite property owners during face-to-face meetings on Tuesday, March 17, 2015. These letters also reported to residents that the modeled indoor air concentrations indicate that TCE in groundwater and vapor beneath the residential parcels is not a threat to human health due to potential vapor intrusion.

Formal reports summarizing the soil vapor and shallow groundwater investigation will be included in the First Quarter 2015 Progress Report as Attachment B - Soil Vapor Monitoring Report and Attachment E - First Quarter 2015 Shallow Offsite Groundwater Investigation Letter Report, respectively.

## MONITORING WELL AND SOIL VAPOR POINT INSTALLATION AND SAMPLING

Shallow groundwater monitoring wells and soil vapor monitoring points were used to assess potential vapor intrusion as a result of trichloroethylene (TCE) impacts in groundwater. This correspondence focuses on investigations completed at three offsite private properties identified as Parcel #1, #2 and #3. Locations of the shallow groundwater monitoring wells and soil vapor sample points installed are depicted on Figure 1.

The monitoring wells and soil vapor points were installed at the respective parcels as presented in the following table:

| Parcel ID | Permanent Well ID (screened interval) | Soil Vapor Point ID (screened interval) |
|---|---|---|
| #1 | MW-173 (5-6)<br>MW-174 (10-11) | VP-5 (7.25-7.75)<br>VP-6 (13.75-14.25) |
| #2 | MW-175 (14-15) | VP-7 (5.25-5.75)<br>VP-8 (10.25-10.75) |
| #3 | MW-176 (13.5-14.5) | VP-9 (5.25-5.75)<br>VP-10 (10.75-11.25) |

Groundwater monitoring wells were constructed with 2 inch diameter, schedule 40 PVC, 0.010 slotted pipe, 1 foot in length and 2 inch diameter, solid schedule 40 PVC pipe to the surface. A 20/40 grade sand pack was installed in the well annulus around the PVC screen to approximately 1 foot above the top of the screen. This was followed by an annular seal consisting of bentonite chips 1 to 2 foot above the top of the sand pack. Cement/bentonite grout was placed in the annular space above the seal to the surface. Soil vapor points were constructed with a 6 inch stainless steel screen produced by Geoprobe®. Teflon tubing was connected to the 6 inch screen. A 20/40 grade sand pack was installed in the well annulus, around the screen to approximately 0.25 feet above the top of the screen. This was followed by an annular seal consisting of bentonite chips 1 to 2 feet above the top of sand pack. Bentonite grout was placed in the annular space above the seal to the surface. The monitoring wells and soil vapor points were completed with flush-mount protectors set in concrete with bolted covers. Well construction logs and vapor point logs are provided in Appendix A.

Groundwater samples were submitted to PACE Analytical Services (Lenexa, Kansas) for analysis of VOCs by SW486 Method 8260B. Soil vapor samples were submitted to ALS Environmental (Simi Valley, California) for analysis of volatile organic compounds (VOCs) by EPA Method TO 15. Analytical results by parcel are summarized below and the laboratory reports are provided in Appendix B.

**TCE Concentrations at Parcel #1 – Fort Smith, Arkansas**

| Sample Location | Measured Soil Vapor Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| VP-5 | 0.84 µg/m$^3$ | 0.03 µg/m$^3$ |

| Sample Location | Measured Water Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| VP-6 | 4.3 µg/L | 0.01 µg/m$^3$ |
| MW-174 | Non-detect | Not applicable |

**TCE Concentrations at Parcel #2 – Fort Smith, Arkansas**

| Sample Location | Measured Soil Vapor Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| VP-7 | 2.8 µg/m$^3$ | 0.08 µg/m$^3$ |

| Sample Location | Measured Water Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| MW-175 | 123 µg/L | 0.20 µg/m$^3$ |

**TCE Concentrations at Parcel #3 – Fort Smith, Arkansas**

| Sample Location | Measured Soil Vapor Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| VP-9 | 31 µg/m$^3$ | 0.93 µg/m$^3$ |

| Sample Location | Measured Water Concentration | Modeled Indoor Air Concentration |
|---|---|---|
| VP-10 | 636 µg/L | 1.02 µg/m$^3$ |
| MW-176 | 720 µg/L | 1.16 µg/m$^3$ |

The modeled indoor air concentrations were compared with the USEPA interim residential indoor air action level of 2 microgram per cubic meter (µg/m$^3$) from the USEPA Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion Memorandum dated July 9, 2014. The modeled indoor air concentrations were less than 1.16 µg/m$^3$ and therefore indicate that TCE in groundwater and vapor beneath the residential parcels is not a threat to human health due to potential vapor intrusion.

In accordance with the Arkansas Department of Environmental Quality's (ADEQ's) guidance, Whirlpool has used the results above to calculate both cancer risk and non-cancer risk related to these groundwater and soil vapor results for TCE by parcel. The calculated risk values for the subject residential parcels are provided below and are below ADEQ's risk thresholds for cancer risk of 1 x 10$^{-5}$ and non-cancer hazard index of 1.

| Parcel ID # | Cancer Risk | Non-cancer Risk |
|---|---|---|
| 1 | $1 \times 10^{-6}$ | 0.01 |
| 2 | $5 \times 10^{-7}$ | 0.04 |
| 3 | $4 \times 10^{-6}$ | 0.50 |

Quarterly monitoring of shallow groundwater and soil vapor will continue throughout 2015 in accordance with the work plans for the shallow groundwater and soil vapor investigations.

During the meetings with the respective property owners, each was asked for their preference for additional crawl space and indoor air sampling. The forms signed by the respective property owners are attached. The requested crawl space and indoor air sampling will be performed during the second quarter monitoring event in April 2015.

If you have any questions or comments please contact me at your earliest convenience.

Sincerely,

**ENVIRON International Corporation**

Michael F. Ellis, PE
Principal

**LIST OF ATTACHMENTS**

Figure 1: Location of Shallow Monitoring Wells and Soil Vapor Points

Table 1: Summary of Groundwater Analytical Results for Offsite Parcels
Table 2: Summary of Soil Vapor Analytical Results for Offsite Parcels

Appendix A: Monitoring Well Construction and Vapor Point Construction Logs
Appendix B: Laboratory Analytical Reports