To: Angela R. Miller  
US EPA, Community Involvement Coordinator  
Office of the Regional Administrator  
61 Forsyth Street, SW  
Atlanta, GA 30303

From: Jim Kovarik, Secretary, Protect Our Aquifer  
11 May 2020

Re: Five Year Review Process on Carrier Superfund Site

Attachment: Letter to Shelby County Groundwater Quality Control Board  
(4 December 2019)

Participants and Purpose
The following questions and comments were prepared by Protect Our Aquifer with specific contributions from the following organizations and individuals noted throughout the document.

Protect Our Aquifer (POA) and Tennessee Chapter of the Sierra Club (SC)  
Ward Archer  Deb Carington  Barry Moore  
Scott Banbury  Jim Kovarik  Carl Richards

Center for Applied Earth Science and Engineering Research at the University of Memphis (CAESER)  
Brian Waldron (BW), Scott Schoefernacker (SS) Sarah Houston (SH)

Southern Environmental Law Center (SELC)  
Amanda Garcia  Nathaniel Watson  Chelsea Bowling

In addition to answering your questions here, we at POA have additional questions about the Carrier Site, adjacent sites (and adjoining plumes), as well as comments intended as an ongoing conversation among all institutions, agencies, organizations, and individuals involved.

Shelby County leaders, agencies, and organizations are committed to knowing, assessing, and eventually remediating contaminated sites in our County. This is one major aspect of protecting our aquifer. We hope to learn from our mistakes and build upon our knowledge through understanding the complexity of remediation. Public education, public information, shared data, and useful translation of on-site activities, aims, and progress form the basis of that knowledge. We are hoping that public agencies (such as the EPA and TDEC) and private companies (such as Carrier and EnSafe) involved in remediation activities join with us in solving these problems and protecting our water.
Overview and Key Questions
Protect Our Aquifer is a nonprofit in Shelby County, whose mission is to guard our most precious natural resource—water. We support efforts to protect the Memphis Sand Aquifer (MSA) for the benefit of present and future generations through conservation, water quality protections, and good management. For example, we recently opposed Carrier Corporation’s request for a permit to inject partially treated contaminated groundwater from the Carrier Corporation Superfund Site into the MSA using off-site injection wells.

During the period of Carrier Corporation’s failed application there was a groundswell of community and public interest in the ongoing cleanup operations at Carrier’s Superfund Site, as well as the nearby Smalley-Piper Superfund Site, but there were more questions than answers. The public interest in this Site is strong, despite the fact that EPA’s website does not include any reports, documents, administrative records, clean-up records, or monitoring data.

Protect Our Aquifer is exceptionally interested in the Five Year Review Process for the Carrier Superfund Site.

As you know, Carrier Corporation contaminated the Memphis Sand Aquifer with TCE from its waste lagoons, spills, and other actions. The cleanup has been on-going for several decades. Carrier’s TCE contamination is not the only contaminant relevant to this Five Year Review: Chromium contamination is also present at the Carrier Facility and the off-site Town of Collierville Water Plant #2 that Carrier has used to extract the groundwater it contaminated with TCE. Carrier has stated that its use of these extraction wells has drawn the chromium plume from the nearby Smalley-Piper Superfund Site all the way to Water Plant #2.

We are deeply concerned that EPA and Carrier are not addressing their chromium contamination and that the TCE clean-up is not making enough progress. The questions you posed to us do not address this problem, nor do they address the need for EPA to coordinate its on-going treatment of chromium at the Smalley-Piper Superfund Site with the remedial efforts at nearby the Carrier Corporation facility. Chromium has been detected in Water Plant #2 since at least 2002, but in the ensuing 18 years, EPA and Carrier have yet to inform the public of any plan to treat that chromium. For these and other reasons, we have added additional information to this letter and have highlighted questions that EPA needs to answer so that the community can be informed.
The people who depend on the MSA for drinking water need clean water regardless of who is responsible for the TCE and chromium plumes. We need, at minimum, EPA and Carrier to fully inform the public by providing the public with up-to-date plans, information about spills, an accurate and detailed site characterization, an accurate groundwater flow model, and all the information necessary to evaluate what is taking place at the Carrier Superfund Site and the nearby Smalley-Piper Superfund Site.

To that end, EPA and Carrier Corporation should address:

1. How will Carrier clean up the chromium plume present at Water Plant #2?
2. How will Carrier clean up the TCE contamination it is responsible for?
3. How will Carrier test for chromium at its new proposed extraction wells?
4. How will the Carrier adequately characterize its contamination and the chromium contamination?
5. How will EPA coordinate its efforts at the Smalley-Piper Superfund Site with Carrier’s remedial plan?
6. How will Carrier address TCE contamination that has migrated significantly north of the Site and the off-site Water Plant #2?
7. How will EPA inform the public of its process, Carrier’s proposals, and seek meaningful community input?
8. How will Carrier test for additional contaminants that might be present, including PFAS?

Five Year Review Questions

1. Are you aware of the Carrier Air Conditioning Superfund Site?

Yes. We have been aware of it and studied it since it came to the attention of our organization (POA). It has been a long running story in Shelby County. More recently, we became aware and interested in the Site through two pieces of information that were made public:

   • Carrier applied to begin injecting partially treated contaminated groundwater back into the Aquifer, and
   • We all discovered that the EPA and TDEC were already injecting partially treated water back into the Aquifer at the legacy Smalley-Piper (S-P) Site. (Fall 2019)

Several questions in this regard:

   a. How, specifically, will Carrier address the concern that the current groundwater treatment system is not designed to treat hexavalent chromium, which has been detected at the Town of Collierville Water Treatment Plant #2 and is in close proximity to the EPA Superfund Site at Smalley-Piper?
   b. Why the artificial separation of the two Sites?
c. Why were remediation efforts at the S-P Site not reported to local authorities, especially in light of its location and a chromium plume so close to the Carrier Site?
d. Why not take a holistic approach with S-P and Carrier given their proximity to each other? (SH)
e. Who is currently involved in these remediation efforts at the Carrier Site, e.g., public agencies, local authorities, corporations, and contractors?

2. Are you aware that a cleanup is ongoing?
Yes. As we understand it, the cleanup has been going on since the late 80s.
   a. What are the timetables and targets for completing remediation at this (and adjoining) sites?
   b. Why are the extraction wells not more widely dispersed around the plume?
   c. How does an injection well reduce pre-existing contamination levels within an aquifer to concentrations that minimize the impact to human health?
   d. How far do you anticipate the contaminants at depth to move further downgradient with and without the re-injection?
   e. Explain the design of your injection well strategies at the two Sites. (BW)
   f. Explain how your designs adhere to scientific best practices for ascertaining contaminant fate and transport. (BW)

3. Are you aware that there are ongoing operation and maintenance (O&M) activities and the duration of those activities?
Yes. We have read early reports of several missteps at the Carrier Site and ongoing efforts to mitigate damage to soil and groundwater resources.
   a. Does the EPA have a protocol for situations where two Superfund sites are side by side? (SH)
   b. Are there other examples where contamination from two or more sites are adjacent or overlap, and how are they treated? (SH)
   c. Does the interaction of the two sites pull chemicals away from where they should be pulled up and out? In other words, is Carrier pulling chromium from the Smalley-Piper Site, and is the Smalley-Piper operation pulling TCE from the Carrier Site, further expanding both plumes?
   d. If an injection well is installed by Carrier, how will the two injection wells interact?
   e. Did the EPA propose/consider alternatives to re-injection given that water quality would be held to such standards?
   f. Has Carrier or the EPA considered disposing of treated water via a wetlands/surface water path to Nonconnah Creek? (BW)
4. Are you aware of the requirement to have restrictions limiting well construction in the general area of the Site?

Yes. As we understand the history, the Town of Collierville actually had to cease using wells near the north end of the Carrier Site because they were showing signs of chromium in the drinking water. In this regard, we have noticed deep wells, (below the upper aquifer and in the Memphis Sand Aquifer), used as extraction wells.

   a. Can you provide data that shows the MSA well does not this pull the TCE plume deeper and disperse it wider? (SH)
   b. What is the logic of pulling a plume of chemicals deeper into the drinking water aquifer?

5. Do you currently have any concerns about potential risk from the Site?

Yes. Concerns have increased recently due to a better understanding of what was happening at both Superfund Sites. The Town of Collierville and its citizens are once again questioning simple facts associated with these Sites:

   • Why has it taken so long to remediate the Carrier Site, and what is the projected completion date?
   • What remediation actions are underway or planned at Smalley-Piper?
   • Can the EPA demonstrate that the quality of our drinking water is unaffected?

The Town of Collierville has expressed concern for the safety of their water for over thirty years—especially in 2002 when chromium was discovered in their Water Plant #2 pumping station on the north end of the Carrier Site. We have seen recent plume pictures (of both Carrier and Smalley-Piper). We have read reports of ongoing efforts to correct groundwater problems. We know that efforts have been ongoing for over three decades. Yet recent activities have raised new questions about both sites.

   a. We have significant concerns that risks to human health are not being addressed at this Site. To evaluate the success of remedial actions, it is imperative to complete state of the art modeling to accurately map the flow of groundwater in the affected area. To date, groundwater modeling efforts have lacked sufficient detail to map contaminant plumes specifically with respect to spatial density, vertical profiling, and representation of variation in soil permeability. In addition, there has been no explicit fate and transport modeling of the contaminant of concern (COC) for the Site (TEC) and the other obvious contaminant (chromium) in a nearby contaminated Site even though the remedial actions at both sites may influence the movement of these toxic compounds. This seems a glaring omission to evaluating human health risks at the Carrier Site even though chromium was not listed as a COC.
b. All of these weaknesses in monitoring and evaluation were elaborated in a letter from the Southern Environmental Law Center that included Protect Our Aquifer and the Tennessee Chapter of the Sierra Club to the Shelby County Groundwater Control Board on 4 December 2019 with respect to an application for an injection well by Carrier (Attachment).

c. Furthermore, evaluating the human and ecological risks from this Site are complicated by the separation of the Carrier Site implementation and operation with the adjacent Smalley-Piper Site. There appears to be little or no awareness of the integration of respective contaminant plumes in monitoring and evaluation data and certainly affected citizens are unable to determine if any coordination between the responsible parties occurs with respect to remedial actions implemented at either site. This must be accomplished to assure the public that common sense public health and environmental management ensues.

d. In review of the Carrier Site data, it is also clear that there should have been an assessment of the occurrence and distribution of polyfluoroalkyl substances (PFAS). Both the Carrier and Smalley-Piper Sites are the result of contaminants released from industrial processes used in metal plating and processing. PFAS are typical by-products of these processes, and it is highly likely that they exist in the contaminated areas and, as with chromium, the sites may well have interacting plumes.

6. Have you received any communications from local, state or other federal agency officials about the cleanup, O&M and/or restrictions at the Site?

Yes and No. The majority of information we have received about the sites came from reading past articles and then trips to the Collierville Public Library to read documents about the Site housed there. We understand there is a huge body information about this Site.

We have not “received” any particular notices from state, federal or other agencies—other than the invite to submit these questions. We have received information from two sources about this Site from local management authorities (Shelby County Health Department and Groundwater Quality Control Board) and a private consultant (EnSafe). In both cases only by petitioning them for information.
7. Have you reviewed information about the Site on the EPA website?  
https://www.epa.gov/superfund/carrier-air-conditioning

Yes. We have reviewed the website recently, and it is lacking in any monitoring data or copies of previous Five Year Reviews. We have to hope this is a recent glitch in the website. We would like to see all information pertaining to this Superfund Site uploaded and available on the EPA website.

8. Would information about the cleanup, O&M and/or restrictions be helpful to you and/or your community?

Yes. All information concerning Superfund sites, damage to our precious resources, and particularly the health of our fabled and invaluable Aquifer (our drinking water source and an industrial resource) are of extreme interest to anyone who lives in Shelby County and cares about local resources and their disposition.

a. When will state and federal agencies conduct the next public meeting on these sites and solutions?

b. Will Carrier conduct information/education sessions for the community?

9. How often would you like to be reminded about the cleanup, O&M and/or restrictions?

- Quarterly updates on progress and results from the previous quarter.
- Immediate notice of any disturbing or odd results generated at the Site.
- Immediate notice of any planned changes or variations from regular, ongoing activities.

10. What would be the most effective way to inform your community about the cleanup, O&M and/or restrictions at the Site?

- Public notices and press releases to the Town of Collierville, Shelby County agencies and media institutions.
- Direct emails to our group (POA) and our Executive Committee.
- Direct emails to other environmental groups, private industries, and any individuals with knowledge or interest in these matters.
Comments
EPA should adhere to and respect local groundwater regulations that are in place to safeguard the public from the health implications of contaminants entering our drinking water.

The installation of an injection type well at Smalley-Piper did not set a good example of working with local partners such as the Shelby County Health Department. Unless science can assure that the groundwater aquifer will not become contaminated using an injection strategy, then injection should not be an option.

It seemed counter-productive when, in February 2019, EnSafe, Carrier and EPA discussed various locations for injection wells, with knowledge that injection wells were not allowed in Shelby County.

Accountability is important in these matters. Moving forward, all parties should be more proactive and engage the community similar to activities at the former Custom Cleaners Site (3517 Southern Avenue). That has been a positive experience given the circumstances and hopefully will benefit the community and remediation efforts down the road. (SS)

Attachment
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(4 December 2019)