West Lake Update

July 30, 2014

To the CAG Executive Committee,

The U.S. Environmental Protection Agency (EPA) Region 7 thanks the West Lake Landfill Superfund Site Community Advisory Group (CAG) Executive Committee for its July 20, 2014, e-mail regarding this agency's work at the Bridgeton Municipal Athletic Complex (BMAC) during the week of May 19, 2014. The EPA continues its vital efforts to protect the entire Bridgeton community through its work at the West Lake Landfill Superfund Site.

Although our primary focus continues to be on the West Lake Landfill Superfund Site, we would like to pause for a moment to provide details for the record on the work we performed at BMAC.

As you know, EPA Region 7 has consistently stated that based on all available scientifically valid data BMAC remains suitable for use. EPA Region 7 agrees with the Executive Committee that all data must be made available at the earliest possible time and be held to the highest industry standards before acceptance. Each step of the way through our assessment of BMAC, we've cited and provided rigorous scientific evidence supporting the decisions and recommendations we've made.

EPA's statements about the usability of BMAC were based on a valid, scientific foundation which EPA shared with the community. All statements regarding BMAC by EPA Region 7 were based on the body of evidence, which was made public at the time, and in so doing this agency has fulfilled its obligation to ensure that accurate information was available to the public.

Specifically, the agency would like to note the following facts that are useful for the record:

- EPA Region 7 released the gamma screening report only after expert analysis and review. We performed extensive quality assurance/quality control processes as well as a scientific peer review of the results. The gamma screen is a tool used to identify areas where levels of radiation may be present that could require remediation. The gamma screen did not indicate any levels of radiation that would require any need to change the use of the BMAC facility. The scientific and technical rigor was of a standard this agency is equipped to perform. EPA Region 7 is now performing that same level of analysis and review of the soil sample tests and will be releasing the final report in the near future.

- Regarding our citation of other scientifically valid sources of data, EPA Region 7 used a series of tests—two by the Missouri Department of Natural Resources and one by the Department of Energy—to develop an early overall assessment of both BMAC and the area surrounding the complex.

- Soil tests conducted by a community group headed by one of your members in March that showed there was no reason for concern, but which was not provided to the EPA until after EPA completed the BMAC screening in May. Because of the limited nature of

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that effort and the fact we are not certain of their QA/QC procedures we have not included this information in our decision making and public comments. The same group later conducted a "Gamma PAL" screening that indicated the presence of Lead-210 at a level that would not require any remediation by the EPA but caused concern in the public after media reports. Again, because of the QA/QC questions we could not use this information as a basis for any agency decision. Instead, what we chose to do was test in the exact same locations. The EPA Region 7 consulted with the leader of that group on the specific locations where soil samples were taken. Although she wasn't able to point out those locations during a site visit she was able to later produce the locations by email, which we have tested.

- EPA Region 7 reviewed existing data from credible scientific and technical experts as part of a holistic effort to understand the conditions of the complex and surrounding area. The MDNR dust samples provided an important recent assessment but were incomplete on their own. The 2005 MDNR haul road data provided important facts. The third set of tests came from the Department of Energy sampling cited in the Record of Decision for the North St. Louis County Sites issued by the U.S. Army Corps of Engineers, St. Louis District Office FUSRAP Program on September 2, 2005. EPA's citation of that sampling came from a scientifically valid official decision document created by the USACE, another credible technical agency. This report indicated the roads were suitable for use and also provided important facts about the surrounding area that were valuable in ascertaining the suitability of BMAC. As EPA indicated at the time, there was no scientific basis from a credible source to indicate BMAC was anything but suitable for use.

- Regarding the USACE report, the EPA believes this official FUSRAP decision document is a scientifically valid source. By citing these three sampling efforts, EPA demonstrated that areas around BMAC did not contain levels of radiation requiring remediation and that there was no indication that conditions within the park would be any different.

- EPA's statements about the usability of the complex were based on valid, scientific sources which EPA shared with the community. All statements regarding BMAC by EPA Region 7 were based on the body of evidence, which was made public at the time, and in so doing fulfilled its obligation to ensure that accurate information was available to the public.

Testing Equipment

Testing Methods

- As referenced in your e-mail, the EPA follows the Multi-Agency Radiation Survey and Site Inspection Manual (MARSSIM). The CAG Executive Committee stated in its e-mail that "[t]he first observation regarding testing is that sodium iodide scintillation detectors for low count rate testing like BMAC can have a,"...reading error of 50%." (U.S. Environmental Protection Agency; Multi-Agency Radiation Survey and Site Inspection Manual (MARSSIM), Revision 1. EPA 402-R-97-016, Rev. 1. August, 2000)." The quoted text above is part of a sentence which in whole reads "[t]he reading error of 50% can occur at low count rates because of a large needle swing, but this decreases with increased count rate."

- This sentence is referring to a detector with an analog "needle type" display gauge. The 50% error results from the equipment operator's inability to accurately read the display due to the wide swing of the needle during relatively low count rates.

- The potential reading error of 50% cited by the Executive Committee does not apply to the equipment used by EPA to conduct the gamma survey at BMAC because the equipment EPA used was digital and not analog and does not require a person to read the needle as it swings from one level to the next since a computer captures the readings automatically. The more technical reasons are as follows:

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1. The survey data were generated using a Ludlum Model 2221 ratemeter with an attached Ludlum Model 44-20 probe (3 inch by 3 inch sodium Iodide crystal) scintillation detector which has an automatic digital display gauge, coupled with a GPS unit and notebook computer running Field Analysis and Sampling Tool (FAST) software.

2. The sensitivity of the Ludlum 2221 with the attached 44-20 probe is such that even low or background measurements result in count rates in the tens of thousands of counts per minute.

3. All the Ludlum 2221 measurements at BMAC and the reference areas were nearly instantaneously captured by a digitally linked computer. This completely eliminates the possibility of equipment operator reading errors since a person is not actually doing any physical reading of the detector.

- The Executive Committee continues by stating "The Multi-Agency Radiation Survey and Site Inspection Manual (MARSSIM) cited by the EPA in their report goes on to tell us that, a sodium iodide detector's… 'energy response is not linear, so it should be calibrated for the energy field it will measure or have calibration factors developed by comparison with a PIC for a specific site. This check should be performed often, possibly several times each day.' Nowhere in the EPA report or attached log books was the mention of ever calibrating the machine to a site specific survey by a PIC (Pressurized Ion Chamber)."

- The Ludlum 2221 with attached 44-20 probes used during the investigation were calibrated according to manufacturer's specifications using a Cs-137 source. They were also response checked twice daily with a similar Cs-137 source as specified in the BMAC Quality Assurance Project Plan and the BMAC Preliminary Pre-CERCLIS Screening Report. This is an appropriate calibration and check source for a gross gamma survey to be used in an investigation into the presence of multiple isotopes that emit gamma radiation at different energies. Furthermore, the comparison with a PIC is necessary if the intended purpose of the data is to report in exposure units such as micro roentgens. The reason for this is further explained in Appendix H of MARSSIM in the same subsection that the authors of the e-mail quoted earlier. The intended purpose of the data for the BMAC investigation was to complete "a survey of gross gamma activity over the exterior areas of BMAC." (BMAC Preliminary Pre-CERCLIS Screening Report, Section 3.1 Surface Soil Gamma Survey). The purpose of the survey was to identify any unusual patterns of concentrated discrete areas of elevated gross gamma activity. These areas would then be selected for soil sampling. Because the gamma screening did not produce any areas of unusual patterns of concentrated discrete areas of elevated gross gamma activity at BMAC, the EPA experts followed statistical protocols by dividing the readings into two sets—measurements above the median and measurements below the median in order to select an equal number of locations from each set for soil sampling.

- Regarding response checks, the twice daily response checks referred to in both EPA's BMAC Quality Assurance Project Plan and the BMAC Preliminary Pre-CERCLIS Screening Report ensure that the device is maintaining its calibration. In addition, the reference areas were surveyed multiple times to ensure that other environmental factors would not significantly contribute to a change in the response of the detectors.

- Regarding "calibrating the machine to a site specific survey by a PIC (Pressurized Ion Chamber)," as explained above, this is only necessary if the intended purpose of the measurements taken with the Sodium Iodide detector are to be converted to exposure units such as micro roentgens.

- The CAG Executive Committee also states "[i]f proper use of the sodium iodide detector was not done it reduces the 58,716 data points in the EPA report to the accuracy of a coin toss." This is not true given the fact the EPA used digital equipment connected to a laptop.

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Lead-210

Soil Samples

- EPA Region 7 tested BMAC for Lead-210. EPA's Quality Assurance Project Plan states that EPA will look for radium, thorium, uranium, and other naturally occurring radionuclides. Lead-210 is a naturally occurring radionuclide that is part of the U-238 decay series and is reported along with several other isotopes.

- In its e-mail to EPA the CAG Executive Committee cited a soil sampling report prepared by Eberline as indicating "high" levels of Lead-210. The use of the word "high" could be confused with meaning there is a public health concern or that the site would require remediation by the EPA. Interviews in the media by independent experts have already pointed out that there was no health risk. The levels of Lead-210 reported by Eberline were below EPA's Preliminary Remediation Goals.

Conclusion

Having examined the entire body of evidence available to date, no scientifically valid data suggests that BMAC is anything but suitable for use. Final results of the BMAC soil sampling will be released upon completion of a thorough validating process based on our steadfast principles of scientific integrity.

We look forward to completing this analysis as we keep our primary focus on the West Lake Landfill Superfund Site isolation barrier and final remedy.

Sources

Letter from West Lake Community Advisory Group (CAG) Executive Committee in Response to EPA's Proclamations Regarding the Bridgeton Municipal Athletic Complex (BMAC), July 20, 2014

EPA Region 7 West Lake Landfill web page

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