West Lake Update

EPA Responds to Homeowner Concerns; Provides Information About Lead-210

December 8, 2016

EPA to Address Concerns About Potential Contamination in Residential Home

EPA has announced that it is developing a focused residential sampling plan in Bridgeton, Mo., following alleged contamination in a Spanish Village home. This is part of an ongoing comprehensive approach by the agency to address potential environmental health concerns in the area, which has also included air monitoring, inspections at nearby landfills and industries, and the separate work at the West Lake Landfill Superfund Site.

"EPA takes the concerns of the community seriously," said EPA Region 7 Administrator Mark Hague. "As with any decision or actions we take, we will rely on scientifically-sound data to guide our efforts. We will consider the collective data when outlining our next steps."

If warranted, the agency will then proceed to other areas where scientific data indicate further investigation is necessary. The agency is working as quickly as possible to address community concerns, and will keep the lines of communication open with the community. In the meantime, EPA would like to provide the community with additional information regarding Lead-210.

What is Lead-210

Lead-210 is a radioactive form of lead and is one of the last elements created by the radioactive decay of the isotope Uranium-238. Lead-210 is also a by-product of radon gas. Data from EPA's investigation at the Bridgeton Municipal Athletic Complex (BMAC) in 2014 demonstrate that levels of Lead-210 in soils around the West Lake Landfill area are consistent with, and often lower than, naturally occurring levels found in other areas of the United States. Lead-210 can accumulate naturally in sediment and drainage areas as a result of the radon washout process, which is explained below. The levels of Lead-210 found in the areas around the West Lake Landfill are within the natural expected ranges, and no data demonstrates that radon gas from the West Lake Landfill has significantly contributed to levels of Lead-210 found locally.

In 2014, EPA found levels of Lead-210 up to 9.46 picocuries per gram (pCi/g) in a BMAC[1] drainage ditch. In addition, community groups and others have reported levels up to 10.9 pCi/g from the same area. More recently an article published in the Journal of Environmental Radioactivity by Kaltofen, Alvarez, and Hixson[2] reported outdoor levels, such as in a drainage ditch, of Lead-210 up to 350 becquerels per kilogram (which is equivalent to 9.45 pCi/g). As stated above, these levels are consistent with naturally occurring levels of Lead-210 in the environment and in particular storm water drainage pathways, as cited in articles below. It is important to carefully consider how Lead-210 occurs in the environment and its natural variability, as well as the importance of establishing background levels on a media specific basis, before drawing conclusions about the presence of contamination.

Several research papers note a natural abundance of Lead-210 in sediments that are generally consistent with these levels:

Article Title: Three Decades of Dating Recent Sediments by Fallout Radionuclides: a Review
Author: P.G. Appleby
Journal: The Holocene
Summary: Lead-210 surface sediment in four international lakes ranged from 14 to 27 picoCuries per gram.

Article Title: Determination of Recent Sedimentation Rates in Lake Michigan Using Pb-210 and CS-137
Authors: John A. Robbins and D. N. Edgington
Journal: Geochimica et Cosmochimica Acta
Summary: Lead-210 from eight locations in Lake Michigan surface sediment ranged from 7 to 23 picoCuries per gram.

Article Title: 137Cs and 210Pb Transport and Geochronologies in Urbanized Reservoirs with Rapidly Increasing Sedimentation Rates
Authors: P.L. McCall, J.A. Robbins and G. Matisoff
Journal: Chemical Geology
Summary: Surface sediments in Lake Rockwell in northeast Ohio showed lead-210 ranged from 20 to 24 picoCuries per gram.

Article Title: Lead-210 Sediment Geochronology in a Changing Coastal Environment
Authors: Jeffrey P. Chanton, Christopher S. Martens and George W. Kipphut
Journal: Geochimica et Cosmochimica Acta
Summary: Lead-210 from surface sediments in Cape Lookout Bight on the coastal basin of the Outer Banks of North Carolina ranged from 3 to 8 picoCuries per gram.

Radon is found naturally in outdoor air, but it's especially a concern in homes where it can be elevated above outdoor levels and is the second leading cause of cancer after smoking (https://www.epa.gov/radon).

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