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EPA Said To Float Strict Dioxin Site Cleanup Goal Based On New Risk Study

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Based on its recently released non-cancer risk assessment of dioxin, EPA scientists are said to have calculated a strict new health goal of 50 parts per trillion (ppt) for use in determining cleanup levels for the ubiquitous contaminant in soil -- a limit that could pressure several major industrial states to strengthen their current cleanup requirements.

EPA officials disclosed the new "acceptable concentration of dioxin in soil" to an April 16 meeting of the Saginaw-Tittabawassee Rivers Contamination Community Action Group meeting in Midland, MI, according to environmentalists. The agency later confirmed the number privately to activists.

The 50 ppt limit, which is significantly more stringent than the 1,000 ppt limit EPA set in 1998, is calculated based on a formula contained in the agency's National Contingency Plan (NCP), which includes the agency's Superfund regulatory blueprint.

The formula, which an EPA official presented to the Midland, MI, meeting, relies on a host of variables, including exposure frequency and duration, body weight, soil ingestion rate, absorption factors, relative bioavailability and the oral reference dose (RfD) -- or amount below which EPA expects no adverse health effects if ingested daily for a lifetime -- of 0.7 picograms per kilogram bodyweight per day (pg/kg-day)e-1 that EPA calculated in its recently released non-cancer risk assessment of 2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin), the most toxic form of the compound, according to EPA's presentation to the Midland meeting.

The cleanup goal is not mandatory -- remediators can use the 50 ppt number as a yardstick to compare individual site testing to, or can simply use the 50 ppt number as their goal. But many states have also set their own dioxin guidelines -- which can be used in those states instead of EPA's standard.

EPA generally sets site-specific remediation levels for: carcinogens at a level that represents an "excess upper bound lifetime cancer risk" to an individual of between 10-4 to 10-6; and for non-carcinogens such that the cumulative risks from exposure will not result in adverse effects to human populations (including sensitive sub-populations) that may be exposed during a lifetime or part of a lifetime, incorporating an adequate margin of safety.

EPA could strengthen the cleanup goal even further once it completes the long-awaited cancer portion of its dioxin assessment, though it is not clear when that document is expected.

According to EPA's presentation, the limit appears to be stricter than similar measures developed by a host of industrial states, including Pennsylvania, Indiana, Kansas, Michigan, Alabama and Texas.

EPA's calculation is generally winning praise from environmentalists, who have long urged the agency to strengthen dioxin cleanup requirements. But activists say they are also disappointed because the limit is discretionary and will not be required for use at non-Superfund sites.

An EPA spokeswoman did not respond to requests for comment by press time.

Development of the new number follows on the heels of EPA's April 6 decision to pull its interim preliminary remediation goals (PRGs) from White House Office of Management & Budget review. EPA proposed the PRGs in 2010, which Administrator Lisa Jackson said should be used until the agency completed its assessment of dioxin risks, an effort more than two decades in the making.

The PRG stalled at OMB and EPA withdrew it after it released the non-cancer portion of its dioxin assessment last February.

EPA explained that it pulled the interim PRGs because they were no longer necessary since the RfD had been published. Officials indicated that they would use the RfD and two older estimates of dioxin cancer potency to guide contaminated site cleanups.

Dioxin Contamination

Now, the agency has told environmentalists and a citizens group in Midland, MI, site of one of the country's most dioxin-contaminated areas, that EPA has calculated the new 50-ppt limit using the new RfD.

"EPA told us that they as a rule don't generate PRGs as a national basis," one environmentalist says, adding that the NCP instead suggests that site-specific remediation calculations are preferred. That plan includes a "standard formula used to determine these cleanup goals, assuming a certain amount of exposure . . . EPA had guidance with the formula and how to choose what to plug into the formula," the source says.

Dropping the new RfD of 0.7 picograms per kilogram bodyweight per day into the formula along with the other exposure numbers results in a cleanup goal of 50 ppt, two environmentalists say.

"We were happy to hear that and glad EPA has resolved that . . . but EPA could be more transparent," the first environmentalist says. "We're disappointed that it's all discretionary. [The 50 ppt goal] won't be used at non-Superfund sites."

Even among nationally designated Superfund sites cleanup goals vary, the source notes. For example, the Escambia Wood Treating Company Superfund site in Pensacola, FL has a dioxin cleanup goal of 30 ppt, the source says. Meanwhile, the cleanup goal in Midland, MI is 250 ppt, sources say.

"That's a frustration from the public health point of view, that number will vary based on site-specific differences and yet we all know that the risk assessment process is as much political as it is scientific," the source says. "It's hard to believe that people in Pensacola are at greater risk than people in Midland."

The second source, who attended the Midland, MI, meeting, said that Helen Dawson, chief of the Science Policy Branch in EPA's Office of Superfund Remediation and Technology Innovation, did not describe the 50 ppt number in her presentation but only after community members indicated confusion with her discussion of the RfD.

"We [were] trying to get them to be more specific about it," the second environmentalist says. "The common language of people in [affected] communities is ppt in soil. Now they get rid of the PRG and change the conversation and narrative to the RfD."

"So, we asked what the RfD looks like in soil. EPA really shied away from that. It's a far cry from the 1,000 ppt [that EPA had] been using. EPA was very reticent to put it out there. Helen Dawson said that 1,000 ppt is no longer our number, it's now 50 ppt."

Residential Soils

EPA set the 1,000 ppt PRG for residential soils in 1998. Environmentalists have long argued that number is not sufficiently protective. Dawson's presentation shows cleanup goals that some states and U.S. territories have established for dioxin. The goals range from the strictest -- Nebraska, at 3.9 ppt -- to the weakest, which are still set at 1,000 ppt. Dawson's slides indicate that Alabama's and Texas' goals continue to be 1,000 ppt.

Coincidentally, the second source added, the state of Michigan settled with Dow Chemical Co. on the 250 ppt-cleanup level "on the day before EPA released the RfD."

The 50 ppt number is "not the most protective value, but it is protective," the first source says. A cancer-based cleanup goal would probably be less than 10 ppt, the source said. As an example, EPA's 2009 interim PRGs for use in residential soils were 72 ppt based on non-cancer risk estimates, but were 3.7 ppt based on cancer risk estimates.

During its meetings with environmentalists, EPA staff did not say when the cancer portion of the dioxin assessment would be completed, the environmentalists said. "They said it could be two weeks or 10 years," the first source says. -- *Maria Hegstad* (mhegstad@iwpnews.com)

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