

Human Health Benchmarks for Pesticides - 2013 Update

Summary

EPA has updated its Human Health Benchmarks for Pesticides (HHBPs) in drinking water to reflect the latest scientific information. HHBPs are levels of certain pesticides in water at or below which adverse health effects are not anticipated from one-day or lifetime exposures.

A total of 363 HHBPs are now available for pesticides that are currently registered for use on food crops. The benchmarks are for pesticides for which the agency has not issued a drinking water health advisory or set an enforceable federal drinking water standard.

EPA first developed the human health benchmarks for pesticides in 2012 to enable states, tribes, water systems, public and other stakeholders to better determine whether the detection of a pesticide in drinking water or source waters for drinking water may indicate a potential health risk. The human health benchmarks for pesticides were developed with the same methods used by the Agency to calculate health advisories for drinking water and are based on data that were peer-reviewed in EPA's pesticide registration process.

In this update, EPA is adding 11 new benchmarks for a total of 363 HHBPs. In addition, EPA has revised 10 of the HHBPs published in 2012 to reflect new scientific information. This update also includes cancer effect benchmarks for 40 pesticides. It should be noted that the data supporting these benchmarks have been previously published in EPA pesticide risk assessments available on the web at <http://www.epa.gov/pesticides/hhbp>.

Background

In March 2010 EPA announced a drinking water strategy that outlined four principles to

expand public health protection. One of these principles is to use the authority of multiple statutes to more effectively protect drinking water, by sharing data collected under different statutes. EPA derived the HHBPs by applying the health effects data from pesticide registrations under the Federal Insecticide, Fungicide, and Rodenticide Act and tolerances under the Federal Food, Drug, and Cosmetic Act as amended by the Food Quality Protection Act, to the typical methods used for developing drinking water health advisories under the Safe Drinking Water Act.

EPA is providing the HHBPs for informational purposes for use by states, water systems and the public to help understand monitoring data for pesticides that have no drinking water standards or health advisories. Drinking water systems can also use them as reference values to respond to customer inquiries if pesticides are detected through monitoring.

Development of Human Health Benchmarks for Pesticides in Drinking Water

The 2013 HHBPs were derived for non-cancer and cancer health endpoints. They include mainly active ingredients at this time, and thus inert compounds used in pesticide formulations are not included.

For non-cancer effects, the HHBPs were established for acute and chronic effects. EPA used the acute and chronic reference doses (RfDs) established for the most sensitive life stage/population. EPA applied standard drinking water exposure assumptions that are used in calculating health advisories.

For the acute HHBPs, the entire exposure is assumed to occur from drinking water. For the chronic HHBPs, EPA applied a default relative drinking water source contribution of 20

percent, assuming additional exposure may arise from other sources, like food, air or dermal contact.

estimation, contact Brenda May at may.brenda@epa.gov.

The acute and chronic HHBPs do not include safety factors in the RfD that are attributed to residual uncertainty with regard to exposure or pre/post natal toxicity as mandated by the Food Quality Protection Act . These safety factors are not part of the standard methodology used for calculating health advisories under the Safe Drinking Water Act.

For cancer effects

Cancer effects benchmarks were calculated for 40 pesticides using cancer slope factors, standard drinking water exposure assumptions, and a risk range of one in one-million to one in ten-thousand. A cancer slope factor is the toxicity value for evaluating the probability of an individual developing cancer from exposure to contaminant levels over a lifetime.

Most pesticides that have cancer effects do not have cancer slope factors (e.g., threshold type carcinogens or those chemicals for which a mode of action has been established and accepted by the Agency). In cases where a cancer slope factor is not calculated, the chronic (non-cancer) HHBPs are considered protective of cancer health effects.

How to View the HHBPs and Supporting Information

To view the table of HHBPs and supporting information, online go to:
<http://www.epa.gov/pesticides/hhbp>.

Current EPA health advisories and enforceable drinking water standards for other pesticides can be viewed at:
<http://water.epa.gov/drink/standards/hascience.cfm>

For More Information

For information regarding derivation of HHBPs, contact Santhini Ramasamy at ramasamy.santhini@epa.gov.

For information regarding the documentation for deriving the reference doses or cancer risk
