

The Agency for Toxic Substances and Disease Registry (ATSDR) a public health agency of the Department of Health and Human Services, has released an updated toxicological profile for mercury.

## ATSDR Toxicological Profiles

- ATSDR is directed by Congress to publish and periodically update toxicological or tox profiles on hazardous substances found at National Priorities List (NPL) sites, the highest priority Superfund waste sites.
- Tox profiles contain information on production, uses, environmental sources, chemical and physical properties, routes of human exposure, toxicity, and existing guidelines and regulations regarding a particular substance.
- Specifically, tox profiles examine, summarize, and interpret available toxicological and epidemiological evaluations on a given hazardous substance.
- Tox profiles are advisory in nature and intended for use by health professionals at the federal, state and local levels, as well as interested private organizations and members of the public.
- Currently, ATSDR has 239 tox profiles that cover more than 250 substances.

## Mercury Profile Provides Important Updated Information

- The toxicological profile for mercury is a critical resource for guiding ATSDR's evaluation of mercury contaminated hazardous waste sites and emergency events where people are potentially exposed to mercury.

- This tox profile reflects the current knowledge about all forms of mercury (elemental/metallic, inorganic and organic) and multiple routes of exposure.
- Exposure to excessive levels of metallic, inorganic or organic mercury can permanently damage the brain, kidneys and developing fetus.
- This profile updates and supercedes a previous mercury tox profile, which was published in 1994, to include new scientific information.
- Recent scientific studies (Seychelles Islands, Faroe Islands) provide data on long-term, low dose exposures to methylmercury, which are particularly relevant to the types of exposures encountered by the U.S. population.

## Minimal Risk Levels (MRLs)

- The updated profile provides Minimal Risk Levels or MRLs for different forms of mercury and different routes of exposure.
- MRLs are health guidance values established by ATSDR. They are intended for use by public health officials as screening tools when determining whether further evaluation of potential human exposure at hazardous waste sites is warranted. They are not intended for use in determining clean-up levels or for other regulatory purposes.
- Each MRL is calculated to ensure a substantial margin of safety. The MRL is not a definitive line indicating the boundary between no risk and risk. Levels immediately above the MRL also are highly likely to be safe, but the further above the MRL, the greater the risk of adverse health effects.

- When calculated for exposure via ingestion, the MRL usually is expressed as micrograms (of the chemical) per kilogram of body weight (of the person) per day. An MRL for ingestion is conceptually equivalent to the Reference Dose (RfD) of the U.S. Environmental Protection Agency, the Acceptable Daily Intake (ADI) of the U.S. Food and Drug Administration, and the Tolerable Daily Intake (TDI) of the World Health Organization.

### **Significance of this Toxicological Profile for Mercury**

- The updated tox profile provides health professionals with ATSDR's interpretation of the scientific information on health effects related to all forms of mercury to assist in accurate assessment and treatment of exposure to mercury.
- The revised MRL for methylmercury provides the health assessors with a screening level developed especially from data gathered in studies in the Seychelles and Faroe islands. These data more closely resemble the types of exposure encountered in the United States than have previously available data.
- The 1994 profile included an MRL for ingested methylmercury of 0.1 µg/kg/day. In 1997, ATSDR published a draft profile for public comment, proposing an MRL for methylmercury of 0.5 µg/kg/day. As a result of public comments and additional information from the Seychelles and Faroe Islands studies, ATSDR revised the MRL to 0.3 in the final profile.
- This tox profile is advisory in nature. It provides recommendations for ATSDR health assessors and other health professionals.

### **Fish Consumption Advice**

- Fish and shellfish are excellent foods, and the new MRL does not change FDA's advice on

fish consumption. Eating fish has many health benefits, and the levels of methylmercury encountered in commercial fish are generally low. Therefore, FDA continues to advise consumers that it is safe to eat fish and other seafood from grocery stores and restaurants.

- Specifically, FDA states that no consumption advice is necessary for the top 10 seafood species, which make up 80 percent of the seafood market: canned tuna, shrimp, pollock, salmon, cod, catfish, clams, flatfish, crab and scallops. Few people eat more than the suggested weekly limit of fish (2.2 pounds).
- However, FDA recommends that pregnant women and women who may become pregnant limit their consumption of shark and swordfish to no more than one meal per month. Nursing mothers who follow this advice will not expose their infants to increased health risks from methylmercury.
- For the general population (other than pregnant women and women who may become pregnant), FDA advises limiting the regular consumption of shark and swordfish to about 7 ounces per week (about one serving).
- The greatest exposure of humans to methylmercury is for those subsistence fishers, recreational fishers and others who regularly eat non-commercial fish from mercury-polluted waters. Of this group, pregnant women and women who may become pregnant, in particular, should pay careful attention to the state advisories that warn people against eating fish caught in mercury-polluted waters. Approximately 40 states have issued mercury-related fish advisories for non-commercial fishing.
- Because MRLs are not designed or intended for use in developing fish advisories, ATSDR advises state and other agencies *not* to change existing fish advisories based on the updated profiles.

## **Additional Information in the Mercury Profile**

The toxicological profile contains expanded information on a number of issues related to exposure to mercury, including information on:

- Uses of elemental mercury, including hazardous folk medicinal and ethnic religious uses.
- How to clean up elemental mercury spills, such as would occur when an oral thermometer is broken.
- Dental amalgam fillings including information on replacement of silver-mercury amalgam fillings.
- Chelation therapy, a medical process used to reduce the harmful levels of mercury in the body.

## **The Review Process**

The toxicological profile for mercury has undergone a number of scientific reviews prior to publication.

- The draft profile was reviewed by ATSDR staff, as well as staff members of the Centers for Disease Control and Prevention (CDC) and other government agencies.
- Following the internal review, the draft profile was then peer-reviewed by a non-government group of subject matter experts.

- The draft tox profile was made available for public review and comment in October 1997.
- In addition, a subsequent draft addressing the public comments was the subject of an expert review panel meeting in July 1998, made up of subject matter experts from government agencies, academic and other non-government fields. A major scientific meeting scrutinized the key studies concerning methylmercury in November 1998. Public comments from the draft review, other government agencies and external peer-reviewers have been addressed and incorporated into the final document as appropriate.
- A last round of external peer review ensured the quality of the final document.
- Final responsibility for the contents and views expressed in the toxicological profile resides with ATSDR.

## **Related Activities**

The National Academy of Sciences plans to release in May 2000 a major review of the health risks posed by exposure to methylmercury. ATSDR, CDC, EPA and other federal agencies will continue to work together after the NAS releases its study to ensure the adequate protection of the public's health from mercury contamination.