

Atrazine Water Monitoring and Human Health

Talking Points

The focus of the July 2011 Scientific Advisory Panel (SAP) meeting will be on the atrazine water-monitoring and human-health studies.

Syngenta has been contributing additional information to the EPA and SAP to advance the science on human toxicology and exposure and risk assessment. Atrazine is one of the most carefully studied pesticides in the world.

- The safety of atrazine has been established by more than 6,000 scientific studies conducted over the past 50 years.
- Hundreds of studies have been submitted over the past 15 years in support of atrazine's 2006 re-registration.
- For the July 2011 SAP, 13 new studies were submitted by Syngenta to the EPA and SAP that will augment the understanding of the science behind atrazine.
- The scientific data show that atrazine is not likely to cause cancer.
- The regulatory standards in place for atrazine are protective of human health and include wide margins of safety.
- The water-monitoring program for atrazine is unprecedented. The monitoring results clearly indicate that atrazine levels, when detected in drinking water, are very low, do not exceed thresholds for human-health effects and allow for large margins of safety.

The comprehensive data all point in one direction: reaffirming the safety of atrazine with even greater certainty. With respect to the science on atrazine and reproductive health, specifically, the results are clear: No one has, will or can ingest enough atrazine via drinking water to adversely affect human health. Indeed, it is not physically possible to dissolve enough atrazine in water to have any impact on hormones or human health.

The most sensitive endpoint in rodents is the lutenizing hormone (LH). Laboratory tests resulted in either no response or only a temporary decrease in LH in rats, with no resulting effect on rat reproduction. The dosing methods used in these laboratory tests are not relevant to potential human exposure in the environment.

These results along with recent studies confirm that it is physically impossible for a person to take in enough atrazine through drinking water to impact his or her health.

General messages:

- Agricultural products like atrazine require extensive data to support registration.
- A robust scientific database of more than 6,000 studies supports the safety of atrazine.
- Syngenta, the U.S. Environmental Protection Agency and other government agencies have provided many additional atrazine studies to characterize the toxicology and exposure potential for the July 2011 SAP.
- With regard to atrazine and drinking water, human health is protected with high confidence. The atrazine safety assessment shows wide margins of safety, even when using EPA's highly conservative risk-assessment methods.
- This is the 11th Scientific Advisory Panel meeting on atrazine since 2000.
- Atrazine was re-registered in 2006, following a 12-year review of its extensive database and numerous SAPs.
- Good science should always lead EPA's decision making.
- The herbicide atrazine has been vital to the farm economy for more than 50 years and has been fundamental in increasing corn, sorghum, and sugarcane production and reducing soil erosion through conservation tillage.
- Atrazine is a critical component in at least 59 agricultural products used by U.S. farmers.

Water Monitoring

Key message: The scope and frequency of the water monitoring programs confirm that atrazine concentrations in drinking water are extremely low or non-detectable and are well within EPA regulatory limits.

- EPA's current drinking water standard of 3 parts per billion provides a very wide margin of safety.
- Drinking water systems in the U.S. are safe where atrazine is concerned. The monitoring results clearly indicate that atrazine levels, when detected in drinking water, are very low, do not exceed thresholds for human-health effects and allow for large margins of safety.
- In 2010, the World Health Organization raised its recommended safe level of atrazine in drinking water from 2 parts per billion to 100 parts per billion — a 50-fold increase — that is far higher than the current EPA drinking-water standard.
- Finished drinking water (not raw water which people do not drink) should be used in drinking-water assessments.
- The current seven-day Atrazine Monitoring Program (AMP) accounts for any short-term variations in atrazine levels. Even the "peak" levels of atrazine are more than a thousand times lower than levels that have been found in animal studies to have no effect.

Mode of Action in Rodents

Key message: Atrazine does not disrupt the endocrine system at levels that people would ever be exposed to in the environment.

- A decrease of LH occurred in laboratory rat studies only after gavage doses of atrazine, which far exceed what a human would ever potentially experience or find in the environment.
- Though these gavage doses suppressed LH levels in rats, there were no effects on the rats' reproductive function.
- The scientific evidence shows that young animals are less sensitive to the effects of atrazine exposure.
- Atrazine's mode of action on LH in rodents would not occur at concentrations found in the environment.

Pharmacokinetics *[The study of how a chemical (atrazine) is absorbed, how quickly it is metabolized and how fast it is eliminated from the body. These atrazine studies help bridge data from animal studies to humans.]*

Key message: It is impossible for levels of atrazine via drinking water to reach concentrations high enough to have any effect on humans.

- The EPA's simplified pharmacokinetic model is acceptable as an interim approach, but Syngenta's proposed model provides a more advanced analysis that leads to a more accurate evaluation of human exposure.
- More accurate analyses of human exposure will advance the science of risk assessment and reaffirm the safety of atrazine in drinking water.
- After 50 years of water monitoring, atrazine levels are well characterized and are very low.

Epidemiology Review:

Key message: The scientific data show there is no definitive link between atrazine and any type of cancer.

- The Agricultural Health Study (AHS), a large, government-sponsored study of agricultural workers going on since 1994, found no association between atrazine worker exposure and any form of cancer. The report studied more than 57,000 licensed pesticide applicators from 1994 to 2007.
- The AHS is sponsored by EPA and the National Institutes of Health (specifically the National Cancer Institute and the National Institute of Environmental Health Sciences).

- The latest examination of the AHS data showed no statistically significant link between the use of atrazine and the incidence of hormonally-related cancers, including breast, prostate and ovarian cancer.
- The latest AHS data and findings add further confidence to what the EPA has already established: that atrazine is not likely to cause cancer in humans.
- Other respected independent organizations and government agencies — the World Health Organization and government agencies in the United Kingdom, Canada, and Australia — have concluded similarly that atrazine is not likely to cause cancer

###