November 14, 2018

Comments on the Environmental Protection Agency's Draft Human Health Risk Assessment for Atrazine and Draft Cumulative Human Health Risk Assessment for Triazine Herbicides (Atrazine, Simazine and Propazine)

Submitted to the Docket EPA-HQ-OPP-2013-0266-1161

Environmental Working Group, a nonprofit research and policy organization with offices in Washington, D.C., San Francisco, Sacramento, and Minneapolis, submits these comments urging the Environmental Protection Agency to use human epidemiological data for the human health risk assessment of atrazine and related triazine herbicides.

Epidemiological studies conducted in Ohio[1] and three other Midwestern states[2] find that elevated exposure to atrazine in drinking water during pregnancy increases the risk of preterm delivery and of lower birth weight in the newborn child. Studies of people and laboratory animals have shown that atrazine and related chemicals harm the reproductive system and disrupt the nerve and hormone systems, affecting one's brain, behavior and crucial hormones such as estrogen, testosterone and dopamine.

In 2016, the state of California listed atrazine, simazine and related chemicals as substances known to cause reproductive toxicity.[3] The European Union completely phased out atrazine because of its potential to contaminate drinking water sources.[4] Yet the EPA continues to allow the pollution of drinking water with atrazine and similar weed killers.

While EWG found the atrazine and triazines' draft human health assessments clear, we believe the agency should strengthen its approach by considering additional science relevant to the human health risks of atrazine and related herbicides. First, we believe the EPA should give significant weight to evidence from human epidemiology studies to supplement its consideration of animal toxicology studies in deriving the safe exposure

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[1] Almberg KS, Turyk ME, Jones RM, Rankin K, Freels S, Stayner LT. Atrazine Contamination of Drinking Water and Adverse Birth Outcomes in Community Water Systems with Elevated Atrazine in Ohio, 2006-2008. Int J Environ Res Public Health. 2018 15(9): 1889.

[2] Stayner LT, Almberg K, Jones R, Graber J, Pedersen M, Turyk M. Atrazine and nitrate in drinking water and the risk of preterm delivery and low birth weight in four Midwestern states. Environ Res. 2017 152: 294-303.

[3] California Office of Environmental Health Hazard Assessment. Atrazine, propazine, simazine and their chlorometabolites DACT, DEA and DIA listed effective July 15, 2016 as reproductive toxicants. Available at https://oehha.ca.gov/proposition-65/crnr/atrazine-propazine-simazine-and-their-chlorometabolites-dact-dea-and-dia-0

[4] "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol. 7 November 2013 Issue 349. Available at http://ec.europa.eu/environment/integration/research/newsalert/pdf/349na2_en.pdf

level to triazine herbicides. Second, given what we know about atrazine's biological activity, we urge the EPA to take into account the human health risks of exposure to atrazine contamination spikes that the agency has shown are commonplace in drinking water.

1. Human risk assessment for atrazine should be based on human epidemiological studies

High-quality epidemiological studies of atrazine have been published in the peer-reviewed scientific literature. These studies should be used for deriving the health risk level for atrazine and related herbicides that act with a similar mode of action. In fact, in EPA's own risk assessment guidance from 1992, the agency notes that "human data are preferable to animal data," and EWG fully agrees with such an approach.[5]

Yet in the EPA's draft human health risk assessment of atrazine and related triazine herbicides, all epidemiology research was discarded. Instead, the EPA based the risk assessment on a modeling study sponsored by Syngenta, the manufacturer of atrazine.[6]

To overcome these shortcomings, the agency should:

- Give particular weight to the human epidemiological studies showing human health harm from atrazine in drinking water.
- Acknowledge that several lines of evidence point to the potential cancer risks of triazine herbicides.
- Use the Food Quality Protection Act (FQPA) 10-fold safety factor to protect children's health from disproportionate impacts of atrazine and other triazines.

EWG emphasizes the importance of using the FQPA factor of 10 for triazines, because these herbicides affect the normal functioning of the neuroendocrine system. Due to the triazines' mechanism of action, the developing fetus and early childhood stages are highly likely to be vulnerable to the harmful effects of these chemicals. EWG reminds the EPA that already in 1993, the National Academy of Science recommended that risk assessors should consider the greater physiological sensitivity of infants and children to toxic chemicals, especially pesticides.[7]

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[5] EPA's Approach for Assessing the Risks Associated with Chronic Exposure to Carcinogens. Background Document 2. January 17, 1992. Available at https://www.epa.gov/iris/epas-approach-assessing-risks-associated-chronic-exposure-carcinogens

[6] Campbell JL Jr, Andersen ME, Hinderliter PM, Yi KD, Pastoor TP, Breckenridge CB, Clewell HJ 3rd. PBPK Model for Atrazine and Its Chlorotriazine Metabolites in Rat and Human. Toxicol Sci. 2016 150(2): 441-53.

[7] National Academy of Sciences. Pesticides in the Diets of Infants and Children. National Academies Press; Washington, DC: 1993. Available at https://www.nap.edu/catalog/2126/pesticides-in-the-diets-of-infants-and-children

EWG urges the EPA to derive the safe exposure level for atrazine and other triazines based on the human epidemiological studies, such as the studies that examined exposure to atrazine in drinking water and birth outcomes.

Two recent studies examined the effects on newborn babies of atrazine in drinking water.

- A study published in 2017 in the journal Environmental Research examined the data for about 135,000 children born between 2004 and 2008 in 46 rural counties in Ohio, Indiana, Iowa and Missouri. The study found that exposure to atrazine in drinking water above 1 part per billion (ppb) during pregnancy increased the risk of preterm delivery (Stayner 2017, cited above).

- A study published this year in the International Journal of Environmental Research and Public Health examined the data for about 15,000 children born between 2006 and 2008 in 22 Ohio communities in the EPA's monitoring program. The study found that the presence of atrazine in the mother's drinking water in the range of 0.15 to 5.9 ppb increased the risk of low birth weight in newborns (Almberg 2018, cited above).

EWG scientists used this latest epidemiological data to define a health-protective benchmark specifically for the period of pregnancy when the developing fetus is most vulnerable to the effects of hormone-disrupting chemicals. Calculations that start from an atrazine concentration of 1 ppb, a level associated with a greater risk of preterm delivery, and include an additional 10-fold safety factor, result in a concentration of no more than 0.1 ppb for atrazine, simazine or related triazine chemicals. This benchmark should be viewed as the maximum contaminant level goal, or a level of contaminant that is not likely to cause any adverse effects on human health and the developing fetus.

2. EPA should establish policies and regulations for reducing atrazine spikes in drinking water.

The 2017 data from the EPA's atrazine monitoring program show that seasonal spikes of atrazine in corn-growing areas contaminate drinking water at potentially hazardous levels. More than a third of the communities where water was monitored had atrazine spikes in late spring and early summer, and the detected peaks ranged from three to seven times higher than the federal legal limit. Although short term, these hidden spikes can present health risks, particularly for the developing fetus.

EWG attaches with these comments our recent report with analysis of the EPA's atrazine monitoring data. Our analysis shows that in many communities, the atrazine levels in tap

water track closely the atrazine load in their drinking water sources, indicating that water treatment systems installed in these communities are failing to remove atrazine. EPA's human health assessment of atrazine has failed to point out the human health significance, and even the existence of atrazine spikes, in drinking water.

EWG urges the EPA to establish policies and regulations for reducing atrazine spikes in drinking water. We also believe that the human health assessment of atrazine should take into account and protect against the harmful effects of exposure to atrazine in drinking water during pregnancy.

Conclusions

EWG finds that the EPA's draft human health risk assessment for atrazine and related triazine herbicides has numerous science and policy flaws and fails to protect children's health. These flaws should be remedied by prioritizing human epidemiological data to account for the effects of atrazine spikes in drinking water for communities in corn-growing areas, and by using the 10-fold FQPA children's health safety factor.

Submitted on behalf of the Environmental Working Group,

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