

A banner for the College of Food, Agricultural, and Environmental Sciences. The text "COLLEGE of FOOD, AGRICULTURAL, and ENVIRONMENTAL SCIENCES" is displayed in white, bold, sans-serif font against a dark, semi-transparent background. The background image shows a campus scene with buildings and trees.

COLLEGE of FOOD, AGRICULTURAL, and ENVIRONMENTAL SCIENCES

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Glyphosate and Cancer in the News Again

By Mary Ann Rose

What happened? In August 2018, a jury awarded \$289 million in damages to a California pesticide applicator with terminal non-Hodgkin's lymphoma, a form of cancer. The plaintiff successfully sued Monsanto over the claim that the weed killer gave him cancer. The applicator's testimony described applying glyphosate-containing products 20 to 30 times each year since 2012, getting the spray on his face frequently, and having several events in which his clothes were drenched with glyphosate tank mix. While it is impossible to prove the underlying cause for any individual case of cancer; the jury was nonetheless

convinced that the plaintiff's cancer would not have occurred without his exposure to the herbicide.

Should you be concerned? Consider the following announcements from the past three years:

- March 2015. International Agency for Research on Cancer (IARC) declared that glyphosate is a “probable human carcinogen” based on “limited evidence of carcinogenicity in humans” and “sufficient evidence in animals.”
- May 2016. Joint Food and Agriculture Organizations of the United Nations/ World Health Organization (FAO/WHO) Meeting on Pesticide Residues concluded that glyphosate unlikely to pose a carcinogenic risk to humans from exposure through diet.
- October 2016. Australian Pesticides and Veterinary Medicines Authority (APVMA) concluded that exposure to glyphosate does not pose a carcinogenic risk to humans.
- April 2017. Canadian Pest Management Regulatory Agency (PMRA) concluded that glyphosate is “unlikely to pose a human cancer risk.”
- March 2017. Committee for Risk Assessment of the European Chemicals Agency (ECA) concluded that glyphosate did not meet the criteria for classification as a carcinogen based on the available scientific evidence.
- December 2017. U.S. EPA Draft Risk Assessment for Glyphosate effects on human health concluded that glyphosate is not likely to be carcinogenic to humans when used according to the product label.

The 2015 IARC decision to classify glyphosate as a probable human carcinogen caused quite a stir and likely influenced the outcome of the August 2018 court decision. In contrast, risk assessments by US EPA and other organizations determined that glyphosate does not pose a cancer risk to humans. The reason that IARC appeared to contradict the findings of the other agencies is that it had a different task to perform. IARC's job was to determine “whether glyphosate had the potential to cause cancer under **some circumstances**”, which may include laboratory studies at very high concentrations. The IARC answer was yes. IARC did not conduct a **risk assessment** for glyphosate, which determines whether a substance is likely to cause cancer under real world conditions. Multiple public agencies including the US EPA conducted risk assessments in the last few years that concluded that glyphosate is **unlikely to be carcinogenic**

to humans through dietary or other types of exposure. The US EPA requires a wide margin of safety when making a risk assessment, setting maximum allowable exposure levels and residue tolerances at 100 to 1000 times less than the “no observable effect levels” established through laboratory tests. Registered pesticides are reviewed every 15 years in the United States, and EPA’s 2017 Risk Assessment was part of that process.

The U.S. Agricultural Health Study has examined how agricultural practices affect cancer and health outcomes among licensed pesticide applicators in Iowa and North Carolina since 1993. An analysis in 2001 showed no significant associations between glyphosate and cancer. In 2018, an updated analysis of the Agricultural Health Study data was published that included 54,252 pesticide applicators and 5779 cancer cases. No association was found between glyphosate and any solid tumors or lymphoid malignancies, including non-Hodgkin’s lymphoma. While there was some indication of increased risk of acute myeloid leukemia in the highest exposure quartile, this association was not statistically significant.

The Agricultural Health study and risk assessments from the US EPA and other organizations worldwide should offer reassurance to pesticide applicators that current science indicates that glyphosate is not carcinogenic at real-world exposure levels. The jury decision in California does not undercut the scientific validity of those risk assessments. The glyphosate story should also underscore the importance of following the pesticide label and wearing personal protective equipment (PPE) – which are the key to limiting a pesticide applicator’s exposure. Risk is not determined solely by pesticide toxicity or carcinogenicity; exposure is equally important!

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New Requirements for Paraquat

By Mary Ann Rose

The EPA will be phasing in key restrictions and label changes for paraquat products due to the disproportionately high number of deaths resulting from accidental ingestion of the highly toxic herbicide (17 deaths since 2000). Only certified applicators who complete an EPA-approved paraquat training program will be able to apply the material; direct supervision of uncertified applicators will not be allowed. Applicators must take the online safety training every three years and keep documentation of the training. The pesticide label will be modified to highlight paraquat toxicity, new application restrictions, and training requirements. Packages will feature safety stickers and counter cards with warnings will accompany each purchase. Registrants submitted label changes in March 2018 and will have 12 months from EPA's label approval date to adopt the new labels.

Closed-system packing will be required for all non-bulk containers (less than 120 gallon). Registrants will submit label changes and new product registrations for the closed system packaging by March, 2019, and will have 12 months from EPA's label approval date to adopt the closed system packaging.

Registrants will be prohibited from sale or distribution of old labeled product after the deadlines, but persons other than registrants may continue to use/sell existing stocks until exhausted.

EPA will grant exceptions to the closed packaging requirement to researchers on a case-by-case basis.

August 2018. Patsy Laird. New EPA Requirements for Paraquat Products. National Pesticide Applicator Certification and Safety Education Workshop. San Antonio, TX.

Chlorpyrifos History and Current Status

By Mary Ann Rose

Chlorpyrifos is an insecticide first registered in the U.S. in 1965. The Food Quality Protection Act of 1996 led to a reduction in registered uses for many pesticides because of the new requirement to consider a person's aggregate pesticide exposure from multiple sources. In 2000, the registrations for residential and certain other uses were dropped, but chlorpyrifos continues to this day to be widely used in agricultural production. In 2007 the Pesticide Action Network North America and the Natural Resources Defense Council petitioned EPA to ban all uses of the insecticide; among the studies they cited were those that showed developmental effects on children. The EPA proposed to ban chlorpyrifos in 2015, and after a reassessment of the data recommended by the EPA's Science Advisory Panel, advised the same course of action in 2016. In March 2017, EPA Administrator Scott Pruitt rejected the agency's conclusions and indicated that EPA would continue to study the science until the next time chlorpyrifos comes up for review in 2022. The tables were turned again in August, 2018 when a federal appeals court ordered the EPA to cancel all registrations within 60 days.

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www.washingtonpost.com/energy-environment/2018/08/09/federal-appeals-court-orders-epa-ban-controversial-pesticide/?utm_term=.ec35fc42b763

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