Zhang et al. Meta-Analysis Statement

Bayer provided the following response to a new meta-analysis by Zhang L, Rana I, Taioli E, Shaffer RM, Sheppard L, a copy of which has been pre-published online. This meta-analysis, which is a statistical combination of data collected by other studies, include**s** select data from the most recent update of the Agricultural Health Study (AHS) cohort that was published in 2018, and select data from five older case-control studies (DeRoos 2003, McDuffie, Eriksson, Hardell, Orsi).

"The Zhang meta-analysis does not provide new epidemiology data; instead, it is a statistical manipulation that is at odds with the extensive body of science, 40 years of real world experience and the conclusions of regulators, including the U.S. EPA, European Food Safety Authorities (EFSA), European Chemicals Agency (ECHA), German BfR, and Australian, Canadian, Korean, New Zealand and Japanese regulatory authorities, as well as the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), which support the conclusion that glyphosate-based products are safe when used as directed and that glyphosate is not carcinogenic.

"The Zhang meta-analysis has a number of serious methodological flaws that lead it to the implausible conclusion that glyphosate poses a greater risk of cancer -- after factoring in the Agricultural Health Study data which concluded that there is no association between glyphosate-based herbicides and NHL – than even IARC concluded, which did not consider Agricultural Health Study data. The flaws in the Zhang study include:

- It cherry-picks data from the AHS study and 5 older case-controlled studies.
- It combines incompatible data from these same studies including different rates of exposure. This is not comparing or combining apples with apples, but apples with oranges and is one reason for the skewed results.
- It combines data from studies that controlled for exposure to other pesticides with data from studies that did not. Combining flawed case control studies into a meta-analysis only repeats the methodological problems with those studies. This is a classic case of garbage in, garbage out.

"In sum, the Zhang study provides no scientifically valid evidence that contradicts the conclusions of the extensive body of science demonstrating that glyphosate-based herbicides are not carcinogenic."