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Monday, November 17, 2008

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Longer Tests on Lab Animals Urged for Potential Carcinogens

WASHINGTON— Current government regulatory agencies typically require that industrial chemicals, including food additives and environmental pollutants, be administered to lab rodents beginning shortly after birth and ending after two years to test whether those substances might cause cancer in humans. But a new peer-reviewed paper published in *Environmental Health Perspectives* argues that those tests sometimes understate human risks and should start *in utero* and continue as long as three years, the approximate life spans of rats and mice. The longer, more sensitive tests would provide a more reliable picture of the risk that various chemicals pose to humans throughout their lifespan, the authors say. The authors charged that practically all rodent tests submitted to regulatory agencies are insufficiently sensitive.

“We must test animals to determine whether a substance causes cancer,” noted Michael F. Jacobson, executive director of the Center for Science in the Public Interest and co-author of the paper. “Waiting for proof of human harm before acting to prevent risk is unethical and treats people like animals in an uncontrolled experiment,” added co-author Devra Davis of Pittsburgh's Center for Environmental Oncology. All known human carcinogens also cause cancer in animals. About a third of known human carcinogens were first uncovered in animal testing. The paper highlights rodent tests on several chemicals that did not appear to be carcinogenic after two years, but did so in longer studies.

For instance, two-year rat tests on the artificial sweetener aspartame did not detect any tumors, but two tests, one of which began *in utero*, that monitored rats until they died showed increased lymphomas, leukemias, and kidney and other tumors. Two-year rat tests of the metal cadmium, which is used in batteries and other products, did not find the substance to be a carcinogen, but a two-and-a-half-year study found lung tumors. Similarly, two-year testing in rats of the solvent toluene did not detect cancer. But significant numbers of cancers did appear in animals exposed to toluene for two years and then allowed to live an additional six months.

“Given the prevalence of so many chemicals in our cupboards, our workplaces, and in the environment at large, government regulatory agencies must change the way they do business and require companies to conduct animal tests from before birth to near the end of their natural

lifetimes. Needless to say, chemical manufacturers prefer tests that are less expensive and less likely to find problems,” said Jacobson.

“Also, since exposure to many chemicals occurs before birth, tests on rodents should begin *in utero*, particularly for chemicals that may interfere with the endocrine and reproductive systems.” (The Food and Drug Administration normally requires such tests on potential food additives.)

The paper cited bisphenol A, or BPA, as an example of a chemical that should be tested on animals before and after birth. BPA is widely used in plastic bottles and in the lining of metal cans, and has been increasing in the diets of infants and children. Fetuses are particularly sensitive to chemicals like BPA, which is an endocrine disruptor. Several governments have recently acted to restrict its use.

The authors recommend that government agencies involved in testing, including the Food and Drug Administration, Environmental Protection Agency, Occupational Safety and Health Administration, Consumer Product Safety Commission, and National Toxicology Program compare the results of two-year and longer-term animal studies and then revise their “best practices.”

James Huff, an animal carcinogenesis expert at the National Institute of Environmental Health Sciences, which publishes *Environmental Health Perspectives*, co-authored the paper.