

FOR RELEASE TUESDAY, JANUARY 27, 2015

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STUDY OF LIFETIME ANIMAL EXPOSURE TO NEW TECHNOLOGY DIESEL ENGINE EXHAUST FINDS NO LUNG CANCER

(Boston, January 27, 2015) The first study to conduct a comprehensive evaluation of lifetime exposure to new technology diesel exhaust (NTDE) has found no evidence of carcinogenic lung tumors. The Advanced Collaborative Emissions Study (ACES), issued today by the Health Effects Institute (HEI)¹ also confirmed that the concentrations of particulate matter and toxic air pollutants emitted from NTDE are more than 90% lower than emissions from traditional older diesel engines (TDE).

The study exposed laboratory rats 80 hours a week, for up to 30 months, to emissions from a heavy-duty diesel engine meeting stringent 2007 US EPA standards that use new filters and other control technology to reduce emissions significantly. In contrast to previous health studies of TDE, the ACES study found that lifetime exposure did not induce tumors or pre-cancerous changes in the lung and did not increase tumors related to NTDE in any other tissue. A few mild changes were seen in the lungs, consistent with long-term exposure to NO₂, a component of NTDE that has been further substantially reduced in 2010- and later model year engines compliant with US EPA rules.

The ACES results are expected to play an important role in future risk reviews of diesel engines by international and US agencies. “We are already seeing a transition in America’s roads with over 30% of the trucks and buses in use today meeting these new standards and the trend is growing in Europe as well,” said Dan Greenbaum, President of HEI. “These results confirm the great strides that government and industry have made to reduce diesel risk – and argue for even greater efforts to accelerate the replacement of older diesel engines.”

The study - *HEI Research Report 184: Advanced Collaborative Emissions Study (ACES): Lifetime Cancer and Non-Cancer Assessment in Rats Exposed to New-Technology Diesel Exhaust* - was conducted by Drs. Jacob D. McDonald of the Lovelace Respiratory Research Institute, Albuquerque, New Mexico; Jeffrey C. Bemis of Litron Laboratories, Rochester, New York; Lance M. Hallberg of the University of Texas Medical Branch, Galveston, Texas, and Daniel J. Conklin, of the University of Louisville, Louisville, Kentucky, and their colleagues. Their work was overseen by independent experts on the HEI ACES Oversight Committee. A separate Pathology Working Group independently reviewed the biological findings, and the investigators’ comprehensive description of all findings was then subjected to

¹ The Health Effects Institute is an independent, non-profit research institute funded jointly by the US Environmental Protection Agency and industry to provide credible, high quality science on air pollution and health for air quality decisions. HEI sponsors do not participate in the selection, oversight or review of HEI science, and HEI’s reports do not necessarily represent their views.

intensive peer review by an expert ACES Review Panel, the members of which had had no part in the conduct of the study. In their Commentary on the study the Review Panel concluded:

Overall, these results indicate that rats exposed to one of three levels of NTDE from a 2007-compliant engine for up to 30 months, for 16 hours per day, 5 days a week, with use of a strenuous operating cycle that more accurately reflected the real-world operation of a modern engine than cycles used in previous studies, showed few NTDE-exposure-related biologic effects. In contrast to the findings in rats chronically exposed to TDE, there was no induction of tumors or pre-neoplastic changes in the lung and no increase in tumors that were considered to be related to NTDE in any other tissue. The effects that were observed with NTDE were limited to the respiratory tract and were mild and generally seen at only the highest exposure level. These histologic changes in the lungs were consistent with previous findings in rats after long-term exposure to NO₂ — a major component of the exposure atmosphere which is being substantially further reduced in 2010-compliant engines.”

ACES is a comprehensive effort, supported by a wide range of public and private entities² and conducted under the independent oversight of HEI and the Coordinating Research Council (an Atlanta-based non-profit organization specializing in emissions characterization). The overall goals of ACES were to test the emissions of new-technology diesel engines to determine not only whether they are achieving the expected substantial reductions in emissions and health effects, but also whether the new control technologies (that include particle filters and ultra-low-sulfur diesel fuel) are resulting in unintended increases in some components of the emissions. Earlier ACES reports (available at www.crao.org) found substantial reductions in particulate matter and other pollutants in the emissions from both 2007 and 2010 engines.

“These results are impressive for what they can mean for reducing exposure in the US and Europe, but also for the promise they hold in the developing countries of Asia and elsewhere in the world,” said Bob O’Keefe, Vice President of HEI and Chair of Clean Air Asia (Asia’s largest city network dedicated to clean air). “Countries like China are already moving toward implementing the ultra-low sulfur diesel fuel that is required for these new cleaner technologies.”

The HEI Statement summarizing HEI Research Report 184, along with the full report and other supporting data and results can be found at <http://pubs.healtheffects.org/>

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² The US Department of Energy, US Environmental Protection Agency, US Federal Highway Administration, California Air Resources Board, Engine Manufacturers Association, American Petroleum Institute, Coordinating Research Council, and manufacturers of emission control equipment