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DEQ Partners with Universities to Examine Air Emissions from Starting Vehicles “Cold” | College of Engineering

01/06/2016

Jan 6, 2016 — SALT LAKE CITY — The Utah Department of Environmental Quality (DEQ) has partnered with Weber State University and Utah State University to examine the impacts vehicle emissions have on air quality on very cold winter days when an inversion is setting in the valley.

Students and investigators from Weber State University’s National Center for Automotive Science & Technology (NCAST) and Utah State University are hoping the findings will help DEQ’s Division of Air Quality develop effective air pollution control strategies.

“We are hopeful these types of research projects will allow us to find specific solutions to Utah’s air quality challenges,” said Bryce Bird, air quality director.

This study is one of fourteen projects funded by the Utah Legislature.

“We found there is no need to warm up your car,” said Joe Thomas, NCAST director who also is a manager with DEQ’s Division of Air Quality. “You can get up in the morning, start the car and just drive. The best thing you can do for emissions is to not idle your car.”

Thomas said there is a lot of misinformation about idling and starting a vehicle. Car manufacturers even provide remote-start features, which allow drivers to remotely turn on their car and let it sit before they get in and drive.

“One of the things we have found is that driving your vehicle warms it up a lot faster than idling,” said Thomas. “So if you idle a car for a long time, it will take a much longer time period to bring the car to an operating temperature.”

When a car reaches its optimal operating temperature, which takes just minutes in modern cars, the catalytic converter can reduce emissions by 99%. The key is warming them up, which Thomas said is done best by starting the vehicle and immediately driving.

The study also found that more than 75% of combined pollutants from automobiles are emitted during the first three minutes of a cold start, defined as when the engine has been off for more than 12 hours.

“You want to avoid a cold start if you can,” Thomas said. “Try to consolidate your trips, use mass transit, anything to avoid starting the car if at all possible.”

However, once the car has been started, Thomas said there is little reason to idle. Apart from traffic stops and red lights, he recommends turning off the car whenever it is safe to do so.

“If you come to a spot where you would put the car in park, it’s a good rule of thumb to turn it off and restart it when you come back,” Thomas said. “That has no wear and tear on your car. Today’s cars are designed in such a way they can take those quick starts, and the emissions devices in the car have probably already reached their maximum temperature for optimal operation.”

Dr. Randy Martin, the study’s collaborator at USU, added, “For a short stop, say about five minutes, on average, our studies have shown your vehicles emits three to four times more oxides of nitrogen and unburned hydrocarbons during a five minute idle as opposed to shutting it off and restarting the engine. Carbon monoxide emissions can show even a greater disparity”

Nearly 70 models of cars were tested during the study. Thomas said the selection of cars is a reflection of vehicles registered and driven in the Wasatch Front and Cache Valley.

“The study shows both economic benefits and environmental benefits,” Thomas said. “Wasting fuel and idling doesn’t make any sense because there’s no work done. It’s not only impacting air quality, which is extremely important, but you’re throwing away gas money out of the tailpipe.”

Since last year’s winter was slightly milder, students will continue conducting tests this winter. Thomas expects to have a final report in Spring 2016.

For more information about NCAST and their current projects, visit ncast.weber.edu. For information on air quality research projects, visit: http://www.deq.utah.gov/ProgramsServices/programs/air/research/index.htm.

This press release was written by Rachel Badali, WSU’s Office of Marketing & Communications.

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About DEQ

Established in 1991, the Utah Department of Environmental Quality’s (DEQ) mission is to safeguard public health and quality of life by protecting and enhancing the environment. DEQ implements state and federal environmental laws and works with individuals, community groups and businesses to protect the quality of Utah’s air, land and water. For more information, visit www.deq.utah.gov, follow DEQ on Facebook (utahdeq) and Twitter (UtahDEQ), or call 1-800-458-0145.