Growth Energy®

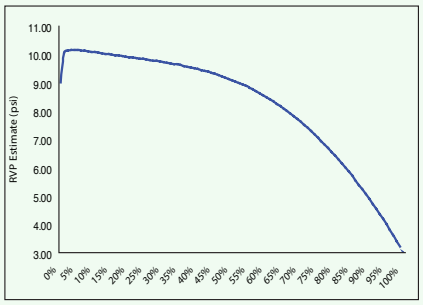
Setting the Record Straight: **E15 and Smog**

E15 is a gasoline fuel blend made with 11-15% ethanol that can be used in all model year 2001 and newer passenger vehicles, which make up 96% of all cars on the road today.

Although summer sales of E15 are not technically banned, outdated smog-related regulations — specifically on vapor pressure or "RVP" — make it virtually impossible in many parts of the country. And there is no good reason for this: E15 actually reduces smog-forming emissions compared to ordinary gasoline, and a nationwide move to E15 would be the equivalent of removing more than 3.85 million cars off the road every year.

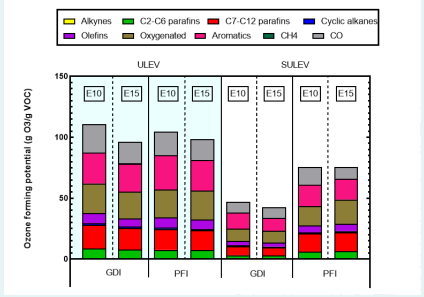
E15 DECREASES SMOG FORMING POLLUTANTS

A 2023 study by the University of California, Riverside commissioned by the California Air Resources Board (CARB), found that E15 had lower ozone-forming potential (OFP) than E10 due to reduced emissions of several volatile organic compound (VOC) ozone precursors, particulate matter (PM), and carbon monoxide (CO), all of which contribute to smog formation. In addition, the study showed a significant reduction of total and non-methane hydrocarbons, which include toxic chemicals such as benzene, toluene, and xylene. Reducing these emissions can result in cleaner air and a healthier environment.



RVP decreases with increased concentrations of ethanol

SOURCE: Sam R. Reddy (General Motors Research and Development Center), "A Model for Estimating Vapor Pressures of Commingled Ethanol Fuels," SAE Technical Paper 2007-01-4006, SAE International, October 29, 2007.



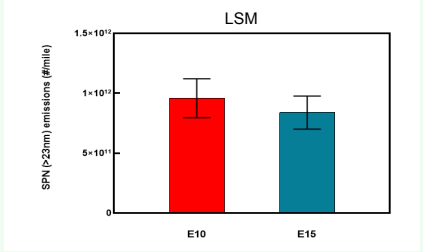
E15 trends lower for ozone forming potential

Newer vehicles led to lower ozone-forming potential (OFP), with the more efficient gasoline direct injection (GDIs) showing lower OFP than port fuel injection (PFIs).

SOURCE: University of California-Riverside, Commissioned by California Air Resources Board, "E15 Is a Cleaner Fuel with Lower Evaporative Emissions and Reduced Emissions of Nitrogen Oxides (NOx) and Particulate Matter."

CURRENT RVP REGULATIONS UNDERMINE THE SMOG-REDUCING POTENTIAL OF E15

E15 has a better smog profile than E10, in part because it has lower RVP, which reduces evaporative emissions of the OFPs and PM that contribute to smog. There is no good reason, then, that the RVP of E15 is regulated more strictly than E10.



According to a study by UC-Riverside, particulate matter mass emissions showed statistically significant reductions from E10 to E15, ranging from 16% to 54%. The weighted carbon monoxide emissions also showed a statistically significant reduction of 17% compared to E10.

SOURCE: UC-Riverside

"The study revealed that emissions of carbon monoxide, total hydrocarbons, and non-methane hydrocarbons declined with the E15 blend. Notably, emissions of particulate matter — tiny airborne particles that pose significant health risks — also dropped significantly when cars burned E15."

"E15 Is a Cleaner Fuel with Lower Evaporative Emissions and Reduced Emissions of Nitrogen Oxides (NOx) and Particulate Matter,"
University of California-Riverside