FACT SHEET

FINAL RULE TO REDUCE HAZARDOUS AIR EMISSIONS FROM RECIPROCATING INTERNAL COMBUSTION ENGINES

TODAYS ACTION

- On February 26, 2004, the Environmental Protection Agency (EPA) issued final requirements to reduce toxic air emissions from stationary reciprocating internal combustion engines (RICE). These requirements apply to RICE used at facilities such as pipeline compressor stations, chemical and manufacturing plants, and power plants.

- The final rule will reduce emissions of a number of toxic air pollutants such as formaldehyde, acrolein, methanol, and acetaldehyde by 5,6000 tons in the fifth year after promulgation. These pollutants, also known as air toxics, are known or suspected to cause adverse health and environmental effects. Formaldehyde and acetaldehyde are probable human carcinogens.

- The final rule limits the amount of air pollution that may be released from exhaust stacks of all new (built after December 19, 2002), and certain existing, stationary RICE above 500 horsepower that are located at major industrial sources of air toxics. According to the Clean Air Act, a major source emits 10 tons a year or more of a single toxic air pollutant, or 25 tons a year or more of a combination of toxic air pollutants.

- Existing stationary RICE must comply with the final rule no later than 3 years after the final rule is published. New stationary RICE must comply with the final rule when they are brought on line. These units have up to 6 months after the rule is final, or 6 months after startup, whichever is later, to demonstrate compliance with the new standards.

- The final rule requires that:
  - Existing and new 4-stroke rich burn (4SRB) engines either reduce formaldehyde by 76 percent or limit the formaldehyde concentration to 350 parts per billion.
  - New 2-stroke lean burn (2SLB) engines either reduce carbon monoxide (CO) by 58 percent or limit the formaldehyde concentration to 12 parts per million.
  - New 4-stroke lean burn (4SLB) engines either reduce CO by 93 percent or limit the formaldehyde concentration to 14 parts per million.
  - New compression ignition (CI) engines either reduce CO by 70 percent or limit the formaldehyde concentration to 580 parts per billion.

- Formaldehyde and CO are surrogates for reducing the air toxics of concern from RICE. Therefore, by reducing formaldehyde and CO, facilities also will reduce the other air toxics to similar levels.

- EPA expects owners or operators of 4SRB engines to install air pollution control devices

known as non-selective catalyst reduction. These systems not only reduce CO emissions, they also reduce air toxics emissions such as formaldehyde, acrolein, methanol, and acetaldehyde. Sources are free to comply with either compliance option, irrespective of the control technique applied.

- Owners or operators of 2SLB, 4SLB, and CI engines likely will install devices known as CO catalytic oxidation systems to meet the formaldehyde and CO requirements.

- EPA estimates that 8,120 new stationary RICE will be built at major sources of air toxic emissions by the end of the 5th year after this rule takes effect. In addition, about 1,800 existing stationary RICE located at major sources may potentially be subject to the rule.

- When proposing this rule, EPA requested comment on three options that could reduce the cost of complying with the final rule requirements. These options focused regulatory controls on facilities that pose significant human health risks from their toxic air emissions. Facilities that could show their air toxic emissions fall below certain thresholds could have been exempt from this air toxics rule if EPA adopted one or more of these options.

- EPA received comments on these risk-based approaches. After considering the complex issues raised and evaluating the effort required to finalize this rule by the court ordered deadline, EPA did not adopt any of these options in the final rule.

HEALTH/ENVIRONMENTAL BENEFITS

- The final rule will provide improvements in protecting human health and the environment by reducing air toxics emissions by 5,600 tons per year in the fifth year after the rule is final. Emissions of formaldehyde, acrolein, acetaldehyde and methanol will be reduced by 40 to 90 percent, depending on the type of stationary RICE.

- Exposure to emissions of these air toxics may produce a wide variety of human health effects including irritation of the eyes, skin and mucous membranes, dysfunction of the central nervous system, and narcosis. Formaldehyde exposure has been associated with reproductive effects such as menstrual disorders and pregnancy problems. EPA has classified formaldehyde and acetaldehyde as probable human carcinogens.

- In addition, the controls that will be used to reduce air toxic emissions will also reduce carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOC), and particulate matter (PM). The total annualized benefits for the final rule are $280 million in the fifth year due to the NOx reductions. Benefits would be greater if we were able to quantify the effects of the air toxics and pollutants other than NOx.

COST

- EPA estimates the total nationwide capital costs for the final rule to be $440 million within the first five years, with an annualized cost of $247 million in the fifth year.

BACKGROUND

- The Clean Air Act requires EPA to develop standards for categories of facilities that emit one or more of 188 listed toxic air pollutants. These standards require the application of strict controls known as maximum achievable control technology (MACT).

- EPA identified stationary RICE as a category of sources that emit one or more of the listed air toxics.

- The Clean Air Act requires EPA to identify MACT controls based on the emissions levels achieved by the best-performing facilities. This baseline for controls, or MACT floor, is established differently for existing and new sources. In the case of existing stationary RICE, there were not enough existing 2SLB, 4SLB, and CI engines with controls to establish an emission reduction for the MACT floor. Requiring these facilities to add controls required for new engines would be cost prohibitive.

FOR MORE INFORMATION

- To download the final standards from EPA's web site, go to Recent Actions at the following address: *http://www.epa.gov/ttn/oarpg*.

- For further information about the final rule, contact Mr. Sims Roy at EPAs Office of Air Quality Planning and Standards at 919-541-5263.

- For information regarding stationary RICE, visit EPAs web site at: *http://www.epa.gov/ttn/atw/combust/engine/ricepg.html*. For other combustion-related regulations, visit EPAs Combustion Related Rules page at: *http://www.epa.gov/ttn/atw/combust/list.html*.