Breathing Easier after a Decade of the Biodiesel Fuel Standard in Minnesota

New Analysis Finds Dramatic Effect on Emissions in State

Mobile sources (cars, buses, planes, trucks, and trains) are the single largest source of air pollution in Minnesota, and represent the second largest source of carbon dioxide emissions. According to the Environmental Protection Agency, mobile sources account for more than half of all the air pollution in the United States. Exhaust from diesel vehicles has long been a major source of air pollution.

Requiring biodiesel blends statewide is one way Minnesota is taking positive steps to reduce both carbon emissions and traditional air pollutants. Minnesota now requires a 10 percent biodiesel blend (B10) in diesel fuel in the warm weather months, and a five percent biodiesel blend (B5) during cold-weather months.

When traditional petroleum diesel fuel is burned, it releases carbon into the atmosphere that has been long sequestered underground. In 1998, the U.S. Departments of Energy and Agriculture studied the lifecycle carbon dioxide emissions of biodiesel as well as the emissions from burning traditional diesel fuel. The studies found that using biodiesel reduced CO_2 emissions by 78 percent, compared to petroleum diesel.

Capturing carbon on the farm

Because biodiesel is frequently produced from plant-based oils (a majority of Minnesota's biodiesel is made from soybean oil), the CO_2 absorbed by these plants helps to offset the carbon emitted by burning biodiesel. Crops like soybeans are grown every season, absorbing and capturing carbon which later is converted into a renewable fuel.

According to an analysis done using the National Biodiesel Board's biodiesel emissions calculator and based on the U.S. Energy Information Administration's reported diesel use in Minnesota for the years 2005 to 2015, the state has prevented a sizable amount of air pollutants from being emitted, including 2.5 million pounds of hydrocarbon and 1.9 million pounds of particulate matter. These estimates take into account the growing number of new, clean diesel engines on Minnesota roads.

In addition, biodiesel use has prevented more than 3.7 million tons of lifecycle carbon dioxide emissions. For context, this is the equivalent of removing 706,649 passenger vehicles from Minnesota roads for an entire year, according to the U.S. Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator.

Less carbon, cleaner air

While newer diesel engines sold in the United States contain pollution control devices that greatly reduce air pollutants, these pollution controls do not prevent carbon dioxide emissions. Furthermore, there are many older diesel vehicles that lack these devices on Minnesota roads. Using biodiesel blends while gradually adding newer vehicles with emissions controls is an effective, two-pronged solution to reducing both carbon emissions and traditional air pollutants.

Federal air quality standards for ozone have recently been toughened as researchers now have a better understanding of the health risks of air pollution. By reducing both major types of air pollution simultaneously, biodiesel plays an important role in keeping Minnesota's air clean and keeping its citizens healthy.