

DIESEL EMISSIONS

ENVIRONMENTAL HEALTH ISSUE PROFILE

Community Action for a Renewed Environment (CARE)
Environmental Sustainability for the Salina Community

Issue: Diesel emissions into the community atmosphere

Background: Diesel engine emissions are highly complex mixtures. They consist of a wide range of organic and inorganic compounds distributed among the gaseous (ozone) and particulate phases. Public health concern has arisen about these emissions for the following reasons:

- Particles in diesel emissions are very small (90% are less than 1 μ m by mass), making them readily respirable.
- Particles in diesel emissions have hundreds of chemicals adsorbed onto their surfaces, including many known or suspected mutagens and carcinogens.
- The gaseous phase contains many irritants and toxic chemicals.
- Oxides of nitrogen, which are ozone precursors, are among the combustion products in the gaseous phase.
- Humans are likely to be exposed to diesel emissions or their atmospheric transformation products in both ambient and occupational settings.

Standards: There are no local standards for diesel emissions in Salina.

The U.S. Environmental Protection Agency (EPA) has national ambient air quality standards (NAAQS) for many of the compounds found in diesel emissions such as particulate matter less than 2.5 microns (PM_{2.5}), ozone, carbon monoxide (CO), and nitric oxides (NO_x). EPA has standards for on-road and off-road equipment and vehicles and for diesel *fuels*. However, due to the long life of diesel engines, the impact of the new fuel standards will not be immediate.

The Mine Safety and Health Administration (MSHA) has exposure limits for particulate matter from diesel sources to a limit of 160 μ g/m³ total carbon for an eight-hour time-weighted average in mining operations and regulates the fuel filtration efficiency for engines used underground in the mining areas to bring the engine diesel PM emission below 2.5 g/hr.

The Occupational Safety and Health Administration (OSHA) proposed exposure limits to diesel particulates in the occupational setting but these were later withdrawn, and there are currently no general industry exposure limits for particulates from diesel emissions.

Community-Specific Indicators:

What does the data say? It appears no testing of diesel emissions has been conducted in Salina. Neither the health department nor local Kansas Department of Health and Environment (KDHE) office have any data on diesel emissions in Salina. There are no air monitors in Salina, according to an air specialist at the KDHE north central district office in Salina.

Who is affected? In general, those affected include people that live around high levels of diesel traffic, work near diesel-based operations, ride school buses or public transport buses or commuter trains, live within 100 meters of a highway, or commute daily in heavy traffic. In Salina, those who ride school buses have the greatest potential of being affected. Thirty three diesel-powered buses serve all of the students and schools in the community. Although there is no formal “no-idle” policy, drivers are encouraged to shut buses off when

awaiting pick ups in the summer, but will generally keep buses running in winter to keep them warm for students.

Salina is located at the intersection of two interstate highways. Salina has three major refueling facilities for on-road diesel trucking operations, located near the north and west boundaries of the city. Together, these facilities are estimated to service at least 300 diesel trucks per day; however, actual data could not be obtained for any of the three facilities. Many of these trucks leave their engines idling for long hours due to refrigeration units or to power utilities in sleeper cabs. Wind direction and location of the refueling facilities and interstate highways reduce the potential for population exposure in Salina because winds are predominately out of the south and will tend to disperse the diesel emissions away from the community for much of the year.

How is the community affected? It is unknown how these diesel emissions are affecting the Salina community.

What are the contributing factors and behaviors of the community? Proximity to the diesel sources is very important. In Salina there is little “commuter” exposure and no mining operations. The national average bus age is more than nine years old, and estimates suggest that the average school bus emits twice as many contaminants per mile as the average tractor-trailer truck (Monahan 2006). Finally, the effects of school bus pollution are localized. In contrast to many vehicles, buses primarily travel through residential areas and near schools.

How does the community protect itself?

The community may want to explore data gathering to see if there is an issue. Many communities have “no-idle” laws to reduce the emissions associated with diesel engines in order to protect students and public bus riders, and to protect local air quality.

Data Sources:

- Where did the data come from?
 - Student exposures on school buses:
<http://www.ehhi.org/reports/diesel/dieselintr.pdf>
 - Exposure standards: <http://www.dieselnet.com/standards/us/ohs.php>
 - EPA NAAQS: <http://www.epa.gov/air/criteria.html>
 - Telephone call to Durham School Services, Salina, Kansas.
- Age of data? 1-10 years
- Additional data needed? Possibly monitor diesel emissions at the refueling facilities and in the neighborhoods closest to each of these facilities. Also, monitor interiors of public transport buses and at the schools where children are dropped off and picked up.

Paper prepared by Sherry Davis, January 2010.