

## Diesel emissions and health

Chair Greenlick, Members of the Committee:

My name is Susan Katz. I am Board President and Head of the Environmental Health Work Group at Oregon Physicians for Social Responsibility. We are committed to protecting our environment from the gravest threats to human health. As a physician trained in Chemistry and Pediatrics and Child Psychiatry I have been extremely concerned about robust evidence of harmful health effects of Diesel Exhaust. For this reason I strongly support House Bill 3310 and Senate Bill 824.

Diesel Exhaust contains at least 40 toxic air pollutants, and is the most deadly component of Traffic Related Air Pollution (TRAP). Diesel is estimated to account for about 90% of airborne particle bound poly-aromatic hydrocarbons, It is the most widespread airborne threat heavily implicated in cardiovascular, pulmonary, and more recently neurodevelopmental and neurodegenerative diseases, such as ADHD, autism and Alzheimer's disease.

Because the brain continues to develop in children and infants as well as the developing fetus, they are therefore most susceptible to these pollutants because of exposures at critical windows of development. Those heavily implicated in recent studies include:

- PM2.5 particles < 2.5 mm, is a criteria pollutant measured by EPA rules and is considered a surrogate in some studies for diesel related emissions. These act as sponges, absorbing other volatile toxicants and carrying them deep into the lungs where they can be absorbed directly into the blood.
- Poly-aromatic hydrocarbons are also a significant component of diesel emissions ( formed from the incomplete combustion of hydrocarbons from diesel, gasoline , oil, wood, garbage and coal.)
- And finally a group newly recognized as very harmful to health, called Ultrafine PM which are particles less than 100 nanometers in size and therefore are included in PM2.5 measurements. These enter the bloodstream directly from the lungs as they are inhaled, and also can directly enter the brain when inhaled, thus bypassing any protection from the blood brain barrier.

One postulated mechanism of neurodevelopmental effects is that these substances act as inflammatory agents in the brain cells, creating reactive oxygen species (ROS) that cause disruption of normal activities, especially as the brain is forming during critical windows of exposure. Thus the formation of the normal brain architecture is disrupted, causing dysfunction and disorder later in life.

It is clear to me that the reduction of diesel exhaust from trucks, outdated school bus engines and other sources will greatly benefit the health of Oregonians, especially our children, as well as our elderly population. I urge you to consider these health benefits heavily in your deliberations about these bills.