

**Environmental and Health Impacts of Coal Trains in Oregon**  
**Speech given to the Eugene City Club 7/6/2012**  
**By Lisa Arkin, Executive Director of Beyond Toxics**

I am honored to speak before the City Club today. And I applaud this inquisitive organization for turning their attention to one of the most pressing issues to come to our local community in recent years. I have worked on environmental health and land use issues in Lane County for more than a decade. My approach to the topic of coal transport and export today is to frame COAL through the lens of my background in local public health and environmental quality issues.

My comments are not against trains, but I will be critical about using our rail system to haul coal to coastal ports and then load the coal “on a slow boat to China.” Now, the phrase “slow boat to China” was a well-known description used among poker players, referring to a person who lost steadily and handsomely. I’d say that the phrase is a fitting description to the proposal to put coal into open rail cars and send them through some of more precious wildlife, scenic areas and heavily populated places in Oregon. Each of us Oregonians will lose what we value most, surely in a steady, but not necessarily handsomely way.

My task here today is to focus on the impacts to human health from pollution associated with coal and coal trains. The organization I lead, Beyond Toxics, has engaged with community health issues in the River Road, Trainsong and Bethel neighborhoods for many years. Recently we completed a community health survey in West Eugene – a striking pattern we found was that 30% of the nearly 350 households we interviewed believe that at least one family member suffers from asthma. Many of them asked us to initiate a local cancer study. Folks say that an abnormally high number of neighbors and friends had been diagnosed with cancer, including children and teens. A 2006 study by State of Oregon did find a higher than expected number of lung cancers in this area. But more research needs to be done.

What do we know about the relationship between health hazards and the transportation of coal? Let me begin with words straight from a Burlington

Northern-Santa Fe Rail Road research document they posted on their own website: BNSF.com.

The document I'm going to quote from is called Coal Dust-Frequently Asked Questions.

Here is the question addressed on the website: "How extensive is the coal dust problem?"

"Since 2005, BNSF has been at the forefront of extensive research regarding the impacts of coal dust escaping from loaded coal cars ... From these studies, BNSF has determined that ... The amount of coal dust that escapes from Powder River Basin coal trains is *surprisingly large*. ... BNSF has done studies indicating that from *500 lbs to a ton of coal* can escape from a single loaded coal car. Other reports have indicated that as much as 3% of the coal loaded into a coal car can be lost in transit. *In many areas, a thick layer of black coal dust can be observed along the railroad right of way and in between the tracks.* ... large amounts of coal dust accumulate rapidly..."

So let's do the math. Multiplying the amount of coal projected to arrive at the Port of Coos Bay, which is 6 – 10 million tons per year, by BNSF's suggested 3% product loss, this calculation suggests that coal trains would release as much as 300,000 tons of coal dust along its journey through Oregon.

[By the way, there are few options for controlling the coal dust. Covering the coal cars is not an economically viable option (remember that coal dust is highly combustible) and spraying on a chemical latex coating is only moderately effective and causes waste disposal problems when off-loading the coal.]

It turns out that open top coal trains spewing 300,000 tons of coal dust is something like casting off nearly 3000 large city buses in the train's wake -- buses emptied of their seats and passengers and filled full of coal dust. Try to picture 3000 buses filled with coal dust littering our state every day – 8 today, 8 tomorrow

and so on, - hanging in the air, or covering up our neighborhoods, or in a cumulative fashion, pressing down on our children's fragile lungs.<sup>i</sup>

There are two avenues for destructive impacts to our respiratory systems – the first is from inhalation of coal dust - which we now know from the Rail Road Company's own research will be a “surprisingly large amount.” The second is the inhalation of diesel particulate from locomotive emissions.

Let's start with pollution from diesel locomotives. Medical research has proven beyond any doubt that diesel particulate is one of the most toxic forms of air pollution. Breathing diesel particulate cuts life short – it is a carcinogen and deals serious damage to the heart and lungs.

Due to the extreme weight of a coal train and its length of 125-150 cars, four to five locomotives are required to haul it. Therefore each train passing through Eugene has at least four times the emission pollution due to diesel particulate of a single-locomotive train.

Each train that comes through Eugene on the way to the coast must make a return trip over the same rail line. The communities along the tracks will get repeated exposure to the pollution, the noise and traffic jams for each coal train. Coal trains will have to switch tracks to get from the South Bound line down the Willamette Valley to the westbound Coos Bay line. It is possible that the trains may have to back up all the way through the Whitaker neighborhood (home to many families and some popular businesses such as Ninkasi and REI), in order to switch tracks. That would essentially sever our city in half by blocking the crossings throughout downtown.

## Health

I want to get back to the air pollution issue. Remember that the health impacts are from the two sources - coal dust and diesel particulate – The health impacts from both are similar enough that we can discuss them together as a related set of very debilitating health outcomes.

Our regulatory system allows the coal industry to use our air, the public's air, as their own waste dump by the spewing known toxins. Smoke from a locomotive contains carcinogenic compounds and soot that blankets our gardens and playing fields, clogs up the airways of all living things, and triggers asthma and heart attacks. From the point of view of health professionals and the US EPA, it is exposure to soot, referred to as fine diesel particulate, that poses the greatest threat. The smaller the size of particles, the greater is their ability to result in health problems. Small particles from diesel emissions can be lethal because they contain microscopic solids or liquid droplets that are so tiny that they can lodge deep in the lungs.

It is worth our while to take a moment to discuss the anatomy of the lung. The lung is a permeable organ where the earth's gaseous atmosphere and the inside of our body meet. The tiny sacs deep in the lung, or alveoli, negotiate the interface between outside air and the blood. As writer and researcher Dr. Sandra Steingraber points out, the vanishingly thin membrane of the lung sacks is our boundary between the outside atmosphere and the mesh of capillaries encasing the lungs for oxygen exchange. "On one side of the membrane is atmosphere ...on the other, blood...Chemical pollutants have greater access to us at this respiratory junction than anywhere else."<sup>ii</sup>

The microscopic size of diesel particulate allows them to pass through this membrane. Once in the bloodstream, these pollutants travel throughout the body. I want to put it plainly - exposure to air pollution particles is both a respiratory and cardiovascular health threat capable of impairing your lungs and heart, and circulating through the body to harm other organs.

Small diesel particles from train emissions have a sticky, bumpy exterior with a large surface area, like the surface of a golf ball. This sticky surface tends to attract other toxic molecules to adhere to the particle— these might include chemicals such as formaldehyde or benzene, and heavy metals such as mercury. Once these fine particulates are loaded with their sticky pollutant passengers, they can travel great distances on air currents, certainly as far as 5 miles. As we breathe, they become trapped deeply in our lungs, pass into the bloodstream, and

can cause serious health effects even at very low levels. People living, working and going to schools in Eugene, and all communities along the rail lines, are at risk.

Here is a description from a community nurse in Philadelphia describing what it is like to care for patients suffering from heart disease, asthma and cancer: *“The harmful effects of soot and air toxics had devastating effects on the fragile health of my patients. On days in which the outdoor air quality was poor my patients with lung disease were chained to their 20-foot oxygen tubing for life support. They aimed to just get through the day. My patients with asthma ... were frequently rushed to the hospital when I was unable to stabilize them. Those suffering from heart disease lived in fear that if they do too much, the crushing pain in their chest would return and perhaps they might not survive another heart attack. As a cancer nurse I sought to ease the pain and suffering of my cancer patients and their families struggling to come to terms with never knowing why they had become sick. This is what air pollution does to people.”*

There’s strong evidence that diesel is a lot more poisonous than other types of particulate matter because emissions also contain toxic metals and carcinogenic hydrocarbons. Diesel exhaust particles can also undergo atmospheric transformation once they are airborne. For example, they may react with other chemical agents in the air, and create highly mutagenic and carcinogenic gases. The World Health Organization has declared diesel particulate to be a carcinogen. Over 40 studies have linked diesel exhaust to lung cancer, as well as cancers of the bladder and soft tissues.<sup>iii</sup> However, there are no federal standards specifically for diesel emissions.

You are all well aware that when Eugene-Springfield has bad air days, often in the winter and late summer months. When that happens, the Lane Regional Air Protection Agency issues a Burn Ban to reduce the health impacts of residential wood smoke. Such restrictions can last a week or more. Despite the fact that diesel particulate is much more toxic than wood smoke, there will be no restrictions for coal dust and diesel pollutants on bad air days.

As an environmental health advocate, my first priority is protecting children's health. Children are at increased risk for disease, especially asthma, because their bodies have not developed the immunity and defense mechanisms that an adult has. Children also breathe more rapidly and frequently than an adult, and are much more prone to absorbing chemicals and heavy metals through their skin because they play outside on or near to the ground. The immune suppressing effects of diesel exhaust can also increase the susceptibility to cancer among people, such as children, who are exposed over extended years of their lives.

How could we fail to act once we understand that children exposed to the pollutants from coal trains develop an increased susceptibility to cancer and other serious health problems? We have a choice between protecting our grandchildren from lungs blackened with coal dust and diesel particulate -- or allowing today's generation to continue our unabated appetite for fossil fuel energy.

This is not just localized problem for people living in the Trainsong, or River Road neighborhoods. Pollution from coal trains would become a citywide hazard. Extensive and costly studies of the distance that fine particulate pollution can travel and its health impacts to nearby communities has been done by the California Air Resources Board at many of California's rail yards. The additional risk of cancer from breathing or absorbing toxic diesel particulate is increased to 25-100 times over the normal risk of getting cancer.

Any resident living within 2 miles of the railyard is in a zone considered to be an unacceptable cancer risk (CA Air Resources Board). We are all in this together.

How do these facts translate into the stuff of our daily lives? Eugene, so proud of being Tracktown USA and twice host of the Olympic Trials, would lose much of its livability and image of a city devoted to sustainable practices and an approved Climate and Energy Action Plan.

Picture the landmarks and neighborhoods are within a 2 mile radius from Eugene UP Railyard

**There are 27 schools within a 2-mile radius, 14 daycares and a number of senior living residences.**

Coal dust is like sticky baby power – as that “surprisingly large” amount of coal dust moves off the rail cars and drifts through our community, it will coat not only our lungs, but also form a slate-colored shroud over our porches and cars. Coal dust will work its way indoors by clinging to shoes or coming in open windows. Picture the things you love most about Eugene, with a pernicious coating of coal dust over them – our wetlands, our organic community gardens, our parks and bike paths, our bench seats at Autzen stadium, Art in the Vineyard and the Cuthbert Theater, our Priuses, our glasses of microbrew at Ninkasi, and even our solar panels. (Isn’t that ironic!)

Local residents are growing more home gardens than ever before. There is a certain feeling of stewardship in making our local community as food-independent as possible. However, if coal dust were to land on edible crops, from raspberries to corn, microscopic dust particles are going to cling to the plant. You can’t just shake it or wash it off.

The coal industry spends millions to sway Americans to give their support for more coal, euphemistically calling it “clean coal” - to gain support for more strip mining and mountain-top removal, coal trains, coal barges, coal-fired power plants and more coal going overseas - on that slow boat to China.

This is a public relations deception so, let’s not be fooled...the environmental and health costs necessary to mine it, transport it, burn it, and dispose of its waste make "clean coal" the equivalent of "happy heart attacks" or “friendly carcinogens."

As writer Kathleen Dean Moore, a Distinguished Professor at Oregon State University, put it, “We have a moral obligation to avert future harms, so as to leave a world as rich in life and possibility as the world we inherited.”

So, stopping coal in Eugene is not about derailing a small number of jobs in Coos Bay. This is about an ethical awareness that coal trains upset the intricate, delicately balanced systems of air and water -- and our lungs and hearts.

These coal companies are not residents here, and won't be affected by the pollution they leave behind. They are just passing through, leaving poisonous dust in their wake that casts a dark shadow across the gardens and porches of Eugene.

My goal is for all children to be able to play outside without fear of asthma attacks and cancer. Our ability to pay attention, to stay on task, to dig into the issues and inhibit our impulses to continue bad habits will be our gift to future generations.

---

<sup>i</sup> 1000000 tons of coal dust released per train x 38.5 [1 ton of coal = 38.5 cubic feet] / 4,016 [number of cubic feet per city bus]

<sup>ii</sup> Raising Elijah, page 137-138

<sup>iii</sup> Guo et al., 2004