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Submission Text

Please accept the attached comments from Oregon Physicians for Social Responsibility and Dr. Theodora Tsongas



September 22, 2015

Ken Blodgett and Victoria Rutson
Surface Transportation Board
395 E Street, S.W.
Washington, DC, 20423

RE: Docket No. 30186
Comments to the Surface Transportation Board on the Draft Environmental Impact
Statement for the proposed Tongue River Railroad

Dear Director Rutson and Mr. Blodgett,

I am Dr. Theodora Tsongas, an environmental health scientist with 39 years experience evaluating the adverse health and environmental impacts of toxic pollutants. I am retired from the Oregon Public Health Division and was formerly Assistant Professor of Environmental Science at Washington State University and Adjunct Associate Professor of Environmental Science at the University of Colorado and of Community Health at Portland State University. I submit these comments on behalf of Oregon Physicians for Social Responsibility.

We are concerned about the many health risks in addition to safety risks posed by coal trains. The draft Environmental Impact Statement for the proposed Tongue River Railroad is inadequate in analyzing how communities will be affected by 4 to 12 full and 4 to 12 empty coal trains passing through per day.

This coal is destined for the Midwest and/or for the Northwest for export. Regardless of where the coal goes, it is important to recognize that there are many health risks (in addition to safety threats) posed by coal trains, and that the communities along the rail line and near any terminal will be adversely affected in the following ways.

Each mile-long coal train with over 100 cars is propelled by four diesel engines, and releases significant amounts of airborne pollutants from diesel engine emissions (containing particulate matter including PM 10 and PM 2.5, polycyclic aromatic hydrocarbons (PAHs) and heavy metals such as mercury and lead), in addition to significant amounts of coal dust. The draft EIS underestimates both the amounts of pollutants released and their potential adverse health impacts.

Diesel emissions are related to the following health conditions [1]:

- impaired pulmonary development in adolescents;
- increased cardiopulmonary and all-cause mortality;
- measurable pulmonary inflammation;
- increased severity and frequency of asthma attacks, Emergency Department visits, and hospital admissions in children;
- increased rates of heart attack in adults;
- increased risk of ischemic stroke;
- increased neurodevelopmental disorders including autism spectrum disorder, attention deficit hyperactivity disorder and lowered IQ; and
- increased risks of lung and breast cancer.

Furthermore, recent evidence indicates that exposure to PM 2.5 generates inflammation throughout the body, and each increase of 1 microgram PM 2.5 per cubic meter of air increases the mortality rate by 1%. (Ostro et al. EHP, June 2015).

The draft EIS states that the Tongue River Railroad could transport 18 to 26 unit coal trains per day. Each of these trains would be a mile long, with 125 cars per train. The draft EIS then contradicts itself by claiming that this railroad will not lead to any increase in coal train traffic. How does the Transportation Board reconcile these two statements?

The trains described in the draft EIS will most definitely increase coal train traffic and will increase exposures to particulate matter, coal dust, excess noise, and traffic delays for communities within in the study area and outside the study area, all along the transportation corridor. Air and watersheds will be adversely impacted.

The draft EIS claims that coal dust has no negative effect on human health. Furthermore, the draft EIS is inadequate in that it considers only the safety and nuisance impacts of coal dust, and fails to do even this in an appropriate manner. Conclusions are based on out-of-date USGS data, which is inappropriate when assessing health risks for which we have current peer-reviewed medical data. In fact, medical studies “suggest that our current ‘threshold’ model of allowing exposure up to a certain regulatory limit is likely to be in error, as pulmonary inflammation and the resultant fibrosis are found over the entire range of exposures. In addition, the synergy of respirable coal dust with other pollutants, such as diesel particulate matter, may accelerate the damage beyond what would be predicted by the epidemiological mine data (Karagianes 1981).” [2]

The draft EIS understates the health risks associated with exposure to coal dust. We now know that “... coal dust in all size fractions contains varying amounts of heavy metal contaminant such as Lead, Mercury, Chromium (Sharma and Singh 1991) and Uranium, particularly in coals from the Powder River Basin.” [2] Exposure to heavy metals in coal dust, even at minute levels, is toxic and adds unnecessarily to body burden.

Exposure to coal dust is associated with [2]:

- chronic bronchitis;

- emphysema;
- pulmonary fibrosis (pneumoconiosis); and
- environmental contamination through the leaching of toxic heavy metals.

In addition, expected noise exposure is associated with [3]:

- cardiovascular disease, including increased blood pressure, arrhythmias, stroke, and ischemic heart disease;
- cognitive impairment in children;
- sleep disturbance and resultant fatigue, hypertension, arrhythmias, increased accidents and injuries; and
- exacerbation of mental health disorders such as depression, anxiety, and psychosis.

Frequent long trains at rail crossings will mean [4]:

- delayed emergency medical service response times; and
- increased accidents, traumatic injury and death.

The added burden of these exposures and their adverse health effects is felt by those persons least able to protect themselves: those living and working along the rail line, within the EIS study area and beyond, including numerous communities throughout the nation. The draft EIS fails to adequately identify and address these concerns, including environmental justice concerns.

The draft EIS states that 24 staff would be needed to run the Tongue River railroad. How many existing jobs, livelihoods, farms, ranches and homes would be disrupted and lost should this railroad be approved and should this coal be mined, transported and burned? The adverse economic impacts of this railroad and the coal mining it would service are not limited to the EIS study area, but will have devastating economic and social impacts all along the transportation corridor and beyond. The added rail traffic will compete with existing commodities such as agricultural products for transport on an already crowded transportation system. This project is not in the public interest and thus should not displace existing economically viable and vital industries. The displacement and/or loss of established farms and ranches for the profit of multinational corporations is unwise, unnecessary, and unconscionable.

This proposed Tongue River RR line is intended to service the Otter Creek Coal Mine. The draft EIS does not adequately address the impacts of this project on the region, the nation, and the planet. It will pave the way for adverse impacts on health and life due to climate disruption by promoting the mining, transport, export, and burning of coal.

Several weeks ago, the Lancet, the renowned international medical journal, published an updated report on climate change and health. The Lancet Commission [5] concluded that

climate change is a medical emergency, but that because climate solutions are health benefits, eliminating fossil fuels will reduce asthma, respiratory and cardiovascular diseases and deaths. Detriments to public health are detriments to long-term economic growth. But the benefits of taking action on climate change are local and immediate. The Lancet Commission concluded that we have very little time to take action to prevent the very worst impacts of climate change. That's why they identify it as an emergency.

Developing infrastructure to continue to develop coal is not only ill advised but will waste scarce resources on technology that is harmful to health and life. We must expend resources aggressively on renewable energy development and implementation. Because of the urgency and the need to take action to reduce the impacts of climate change, this consideration alone should be sufficient reason for the Transportation Board to choose the “No Action” alternative.

We are dismayed that, thus far, the Board has failed to adequately consider the adverse and cumulative health impacts that are certain to result from increased coal train traffic in communities along the entire transportation corridor. Oregon Physicians for Social Responsibility offers the attached fact sheet (Appendix A) in hopes that the Transportation Board will soon better understand the many serious health risks associated with coal trains. [1]

Oregon and Southwest Washington are already adversely impacted by coal train traffic. We object to any further damage to our air quality that the proposed rail line and coal trains would certainly bring to our communities and to others. We request that the Regional Transportation Board choose the “No Action” alternative, deny any and all permits for the Tongue River Railroad, and protect the health of our families and communities.

Thank you for consideration of our comments,

Theodora Tsongas, MS, PhD

[1] Oregon Physicians for Social Responsibility Fact Sheet on Airborne Particulate Matter and Public Health. See Appendix A.

[2] <http://www.coaltrainfacts.org/whatcom-docs-position-statement-and-appendices#appendixB>

[3] <http://www.coaltrainfacts.org/docs/appendix-D.pdf>

[4] <http://www.coaltrainfacts.org/docs/appendix-E.pdf>

[5] www.thelancet.com/commissions/climate-change

Appendix A

OREGON PHYSICIANS FOR SOCIAL RESPONSIBILITY

AIRBORNE PARTICULATE MATTER AND PUBLIC HEALTH

BACKGROUND

Outdoor air quality is an increasing concern globally with expanding industrial and transportation emissions. The World Health Organization (WHO) has declared that Particulate Matter (PM) in ambient outdoor air affects more people than any other pollutant. Chronic exposure to particles contributes to the risk of developing or dying from serious disease. (WHO 1) The effects of PM on health occur at levels of exposure currently being experienced by most urban and rural populations in both developed and developing countries. Burning fuel results in two phases of emissions. In addition to the “particulate phase,” there is a “gas phase” containing air pollutants such as benzene, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), and other chemicals, which also contribute to disease. (EPA 1, EPA 2) The combustion of fossil fuel for electricity and transportation, especially coal and diesel, are major contributors to outdoor air pollution.

WHAT IS PARTICULATE MATTER?

Particulate Matter (PM), is composed of very small, solid particles, formed from the incomplete burning of fossil fuels, such as coal, diesel, gasoline, and biomass. PM_{2.5} measure 2.5 microns or less; PM₁₀ are particles 10 microns or smaller. PM consists of a complex mixture of soot, black carbon, absorbed water, aerosolized sulfuric acid droplets, other acids, nitrogen, sulfur, metals, and other toxic substances, especially PAHs (Perera), which are absorbed by the sponge-like particles and carried by them deeply into the smallest compartments of the lung (alveoli) where they gain direct access to the bloodstream and may then contribute to various diseases in organs distant from the lungs.

The World Health Organization (WHO) reports that there is not a threshold below which no damage to human health is observed. Their guidelines for maximizing health within the constraints of a modern world are that PM_{2.5} should not exceed an average of 25 micrograms per cubic meter of air (25mcg/m³) in a 24-hour period, and not exceed an average annual exposure of 10mcg/m³. (WHO 1) To put this into perspective, the PM_{2.5} for Portland, Oregon in January 2014 ranged from 30-76 while, during same month, the PM 2.5 in Beijing, China was over 600. In Harbin, China in October of 2013 (the start of the heating season), the PM_{2.5} was over 1000mcg/m³ (Guardian). The major contributors to this astronomically high PM_{2.5} in China are burning coal and vehicle exhaust.

HOW DOES PARTICULATE MATTER AFFECT PEOPLE?

The fine particles less than 2.5 microns (PM_{2.5}) are particularly important in triggering disease because they penetrate deeply into the alveoli of the lungs. Some inhaled particles are taken up by macrophages, resulting in lung inflammation. The final common

pathway of the pathologic effects of exposure to particulate matter, as well as gas phase pollutants such as benzene and polycyclic aromatic hydrocarbons, appears to be inflammation. (Avogbe, Bellavia, Dominici, Mustafic, Peters 2011, Pieters). The effects of inflammation on various body organ systems are complex, but increased levels of particulate matter are associated with a number of ill health effects including: increased cancer rates, especially lung and breast (Beeson, Crouse, Demetriou, Dockery, Pope, Wei), congenital lung, heart and immune system anomalies in children (Gauderman, Picciotto Vrijheid,) increased rates of asthma, worsening of preexisting asthma and chronic obstructive pulmonary disease (COPD) (Carlsten, Gowers, Delamater, HEI Panel, Trasande, WHO 2), higher rates of heart attacks and strokes (Chen, Dominici, Lie, Mustafic, Qian, Wellenius, Shaw), and higher rates in children (exposed prenatally) of neurodevelopmental disorders such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), lowered IQ, and adverse behaviors. (Becera, Chiu, Newman, Perera 2013, Perera 2009, Roberts, Volk 2013, Volk 2011) Not surprisingly, the most vulnerable populations are the elderly, pregnant women, children, and people that already have pulmonary diseases like COPD or asthma.

WHAT ARE CURRENT ISSUES IN THE PACIFIC NORTHWEST?

A recent study from the University of Washington, evaluating air quality as a result of increased coal transportation by rail in the Pacific Northwest, found that living within 25 meters of two rail lines in the Blue Ridge Seattle neighborhood was associated with significantly increased exposure to diesel particulate matter (DPM) and airborne coal dust. A proposed 50% increase in diesel train traffic (if coal terminals are built in coastal harbors) is projected to similarly increase small particulate matter exposure. When added to regional background emissions, this increase would bring total concentrations higher than the new US National Ambient Air Quality Standards (NAAQS). (Jaffe)

In addition, a sharp increase in mile-long trains already transporting oil through the region has considerably increased airborne diesel emissions. In 2013, 19,065 tank cars moved more than 11 million barrels of oil through Oregon, according to annual reports that railroad companies submitted to the Oregon Department of Transportation. That's up from the 5,491 cars that moved 2.9 million barrels in 2012. In 2007, railroads moved just 659 tank carloads of oil (Oregon Live).

KEY AMERICAN MEDICAL SOCIETIES AND THE WORLD HEALTH ORGANIZATION HAVE ISSUED POSITIONS ON PARTICULATE MATTER AND HEALTH:

The American Heart Association (AHA) in 2010 updated and summarized its 2004 Scientific statement position: "The overall evidence is consistent with a causal relationship between PM_{2.5} exposure and cardiovascular morbidity and mortality. This body of evidence has grown and has been strengthened substantially since publication of the first AHA scientific statement and, ... because the evidence reviewed supports that there is no safe threshold, it appears that public health benefits would accrue from lowering PM_{2.5} concentrations even below present-day (EPA standards), if feasible, to optimally protect the most susceptible populations." (Brook)

The American College of Obstetricians and Gynecologists (ACOG) together with the American Society of Reproductive Medicine (ASRM) in October 2013 issued a statement, “The evidence that links exposure to toxic environmental agents and adverse reproductive and developmental health outcomes is sufficiently robust, ... individuals alone can do little about exposure to toxic environmental agents, such as from air and water pollution, ... calling for timely action to identify and reduce exposure.” (ACOG)

The American Academy of Pediatrics (AAP) issued a policy statement linking ambient air pollution to adverse health outcomes in children and recommended the National Ambient Air Quality Standards (NAAQS) be promptly reviewed and revised to protect children. (AAP, 2004, reaffirmed 2009)

In October 2013, WHO’s International Agency for Research on Cancer (IARC), classified both outdoor air pollution, as a whole, and particulate matter, on its own, as carcinogenic. Therefore, it is vital to implement efficient policies to reduce exposure to pollution worldwide. (World Health Organization (WHO 2) and American Cancer Society).

SPECIFIC DISEASES ASSOCIATED WITH EXPOSURE TO HIGHER LEVELS OF PARTICULATE MATTER IN AIR POLLUTION

Pulmonary - Studies have demonstrated the effects of particulate matter on the lungs:

- decreased lung function (WHO 3)
- inhibited lung development in children (Gauderman)
- causes and makes asthma worse, resulting in increased hospitalization (Delameter, Gowers, HEI Panel, Pandya)

Cardiovascular - Studies have linked increased particulate matter with increased cardiac disease:

- increased cardiovascular disease mortality and morbidity in both short term and long term exposures to PM 2.5 (Brook)
- increased hospital admissions for serious cardiac arrhythmias (Peters 2000)
- increased probability of admission for acute myocardial infarction (Mustafic, Peters 2001)
- increased ischemic heart disease, arrhythmias, congestive heart failure (Dominici) and bio markers (HRV) associated with increased cardiac morbidity and mortality (Pieters)
- increased hospital admissions and death from heart failure (Shaw)
- increased risk of congenital cardiac anomalies in children (Vrijheid)

Cerebrovascular - Studies have shown links between particulate matter and strokes:

- increased hospital admissions for strokes (Dominici, Lue, Wellenius 2005)
- significant increase in stroke mortality associated with increase in PM (Chen, Qian)
- increased risk of stroke associated with increased exposure to small PM, black carbon, and nitrous dioxide (Wellenius 2012)
- increased risk of stroke and death from stroke for post menopausal women (Miller)

Cancer – Studies relating cancer risk and particulate matter:

- Exposure to ozone and PM correlated with development of and mortality from lung cancer (Beeson, Dockery, Pope)
- increased biological markers associated with risk of lung cancer (Demetriou)
- increased oxidative DNA damage predictive of cancer risk (Avogbe)
- increased rates of breast cancer (Crouse, Wei)

Neurodevelopmental – Studies associating in-utero exposure to particulate matter and

- Increased incidence of autism spectrum disorder (ASD)—(Becerra, Roberts, Volk 2013, Volk 2011)
- Increased incidence of behaviors associated with attention deficit hyperactivity disorder (ADHD) (Chiu, Newman)
- Lowered IQ (Perera 2009)
- Increased behavioral symptoms of anxiety, depression, social problems, rule breaking, and aggression (Perera 2013)
- Neurobehavioral development in children benefited from the shutdown of a coal-burning plant (Perera 2008)

General :

- increased mortality from cardiac, respiratory and kidney disease in all members of communities with coal exposure (15,16,17,18 Hendryx 2007, Hendryx 2010, Hendryx 2008, Hendryx 2009)
- long term exposure linked to decreased life expectancy from cardiopulmonary mortality (Krishnan, WHO 4)
- prenatal exposures linked to altered immune system development (Hertz-Picciotto)

RESOURCES THAT INFORMED THIS FACTSHEET

ACOG—The American College of Obstetricians and Gynecologists, Committee Opinion, No. 575, October 2013 -

http://www.acog.org/About_ACOG/News_Room/News_Releases/2013/Environmental_Chemicals_Harm_Reproductive_Health

AAP—American Academy of Pediatrics. Committee on Environmental Health. Ambient Air Pollution: Health Hazards to Children, , *Pediatrics*, 2004: 114, 1699-1707, Reaffirmed April 2009

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EPA 2— http://www.epa.gov/teach/chem_summ/BENZ_summary.pdf

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