TESORO SAVAGE FACTSHEET
Oregon Physicians for Social Responsibility

- Tesoro-Savage has used out-of-date emissions factors to estimate the levels of toxic and hazardous air pollutants that would be released by this terminal.
- The emissions factors used by Tesoro Savage are based on industry–wide average emissions. What concerns us is that fugitive emissions, as well as intermittent spikes in emissions that have not been estimated, are likely to be large and would not be monitored or mitigated, and would cause undue health risks to the surrounding community.
- It is not possible to evaluate the risks of these health problems without accurate estimates of emissions. We know that these emissions will occur but we cannot rely on the claims of Tesoro-Savage that they will be below regulatory levels.
- Among the potential health risks for people living and working nearby and for children living and going to school nearby are: cancers, including leukemias, lung and breast cancers, heart disease and stroke, lung disease such as asthma, chronic obstructive pulmonary disease (COPD), brain damage and cognitive dysfunction, poor lung development, neurodevelopmental disorders such as autism and ADHD, among others.
- For cancer-causing air pollutants (there are at least eight predicted to be released at some level) and for some toxins like lead, **there is no safe level of exposure.**

- The following information is sourced from these sites: EPA[ii], National Institutes of Health[iii], Centers for Disease Control (CDC)[iv] and International Agency for Research on Cancer (IARC)[v].

· Benzene

Acute inhalation exposure of humans may cause drowsiness, dizziness, headaches, irritation of eyes, skin and respiratory tract, and at high levels, unconsciousness. Chronic inhalation exposure has caused various disorders in the blood, including anemia and aplastic anemia. Women exposed to high levels by inhalation have abnormalities of the reproductive organs, and adverse effects on the developing fetus have been observed in animal tests. An increased incidence of leukemia has been observed in humans occupationally exposed to benzene. EPA has classified benzene as human carcinogen.

· Butane

Acute human exposure causes drowsiness, central nervous system (CNS) depression and asphyxia.

- Ethylbenzene

Acute exposure in humans results in respiratory effects, such as throat irritation, chest constriction, eye irritation and dizziness. Chronic exposure has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure. Limited information is available on the carcinogenic effects of ethylbenzene. In a study by the National Toxicology Program, exposure to ethylbenzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. IARC determined that ethylbenzene is possibly carcinogenic.

- Toluene

The CNS is the primary target organ for toxicity in humans and animals. CNS dysfunction has been frequently observed in humans acutely exposed to elevated airborne toluene; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic abusers. Chronic inhalation exposure causes irritation of the eyes, nose, mouth and upper airway, dizziness, and headache. Human studies report developmental effects, such as CNS dysfunction and minor limb anomalies, in the children of pregnant women exposed to high levels of toluene or mixed solvents by inhalation. IARC has concluded there is inadequate information to assess the carcinogenic potential of toluene.

- Xylenes

Acute inhalation exposure in humans results in irritation of the eyes, nose, throat and gastrointestinal tract, and neurological effects. Chronic inhalation exposure of humans to mixed xylenes results primarily in central nervous system effects, such as headache, dizziness, fatigue, tremors and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA determined that is not classifiable as a human carcinogen.

DIESEL EXHAUST

Diesel exhaust from train engines and oil shipping vessels is made up of solid particles, liquid and gaseous components. Gaseous components include carbon monoxide, nitric oxide, nitrogen dioxide, sulfur oxides, and polycyclic aromatic hydrocarbons (PAHs). Diesel exhaust particulate matter is comprised of carbon particles, organic components (including PAHs), and trace metals. The main fraction of diesel particulate matter is made of particles less than 2.5 micron in diameter (PM 2.5) and they penetrate deep into human lungs.

Diesel exhaust induces oxidative stress, inflammation and damage to the cellular genome and it is classified as a human carcinogen by the CDC and the IARC[vi]. Other adverse health effects of diesel particulate matter exposure include asthma and COPD (emphysema). Exhaust components travel across the cellular lining of the lungs to enter the bloodstream resulting in cardiovascular and cerebrovascular diseases like heart attacks and strokes. Fetuses, infants, children, the elderly, and those with preexisting disease or impaired immune systems are particularly vulnerable to health impacts from diesel particulate matter air pollution.

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[i] Tamaddoni M, et al. Experimental study of the VOC emitted from crude oil tankers. Process Safety and Environmental Protection. Nov 2014. p929-937

[ii] https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants

[iii] https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

[iv] https://www.cdc.gov/niosh/docs/88-116/

[v] https://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

[vi] Steiner S et al. Diesel exhaust: current knowledge of adverse effects and underlying cellular mechanisms. Arch Toxicol, May 2016, p. 1541-53

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