GPT/BNSF Custer Spur EIS Co-Lead Agencies
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RE: Gateway Pacific Terminal/Custer Spur EIS Scoping Comments

My name is Gaythia R. Weis. I have a Master's of Science degree in Analytical Chemistry. I am focusing my Gateway Pacific Terminal/Custer Spur EIS scoping comment on chemical dust suppressants, which I feel form a small but significant subset of the many possible impacts of this project. While suppression of dust is an environmental positive, the means of mitigation may also create new auxiliary adverse impacts.

Potential Environmentally Adverse Impacts of Chemical Coal Dust Suppressants

Concern: Potential environmentally adverse effects of chemical coal dust suppressants may be enhanced by their preferential concentration as a surface coating on coal particles; in the most environmentally exposed top layers of coal cars or coal piles; and in coal leachate. Additionally, the presence of coal dust suppressants may increase the absorption of potentially harmful chemical constituents originating in the coal particles across biological membranes. Coal dust suppressants may also increase dissolution of these potentially harmful chemicals out of coal stockpiles and into leachates. Processes of bioaccumulation may magnify impacts. Coal dust suppressants should be evaluated and monitored in both freshly applied as well as aged and weathered forms. Actual coal dust suppressants used along the entire supply chain should be identified by careful monitoring. To aid in risk reduction, coal dust suppressant material ingredients should be publically disclosed.

1. Chemical Coal Dust Suppressants Need to be Characterized by Chemical Analysis, Bioassay and Other Methods to Determine Potential Adverse Impacts in Terrestrial, Wetland and Marine Environments.

Rationale: Burlington Northern Santa Fe Railroad, (BNSF), is apparently authorized to regulate shippers based on the physical effects of coal dust on track stability, not concerns regarding the toxicity or the potential adverse biological impact of coal dust or related products in the environment: (See reference A, below): *"The STB* [Surface Transportation Board] *concluded that coal dust is a harmful contaminant of rail ballast and that it is appropriate for BNSF to prevent the loss of coal through appropriate coal loading rules rather than deal with coal dust after it has escaped from loaded cars through expanded maintenance of the rail lines."*

As noted by the US Environmental Protection Agency, (EPA), (Reference B, below): *"The majority of research on dust suppressants has been by industry and has focused on the effectiveness (or performance) of dust suppressants to abate dust, however, little information is available on the potential environmental and health impacts of these compounds."*

This EPA document also notes: *"The fundamental mechanisms of how the dust suppressants work, break down, degrade, and move in the environment are not well understood at this time. "Degradation" includes effects of solar radiation, abiotic oxidation, biological transformations, dissolution, and physical weathering."*

For coal preparation and processing plants, the EPA requirements are based on Surface Mining Control and Reclamation Act, (SMCRA), and OSHA, (human health and safety), requirements. (See Reference C and D, below)
"Where appropriate chemical dust suppression agents are selected by the owner/operator as a control measure to minimize fugitive coal dust emissions, only chemical dust suppressants with Occupational Safety and Health Administration (OSHA)-compliant material safety data sheets (MSDS) are allowed, the MSDS must be included in the fugitive coal dust emissions control plan, and the owner/operator must consider and document in the fugitive coal dust emissions control plan the site-specific impacts associated with the use of such chemical dust suppressants (e.g., water run-off, water quality concerns)."

In order to fully address "water quality concerns" and other environmental issues, long term effects need to be evaluated; including the potential for bioaccumulation. Coal dust suppressants should be evaluated in both freshly applied as well as aged and weathered forms. The potential for synergistic effects with coal dust should be examined.

2. Environmentally accessible coal dust suppressant concentrations are likely to be greater than what would be indicated by bulk concentration in the coal load as a whole.

Rationale: In transit: Chemical dust suppressants are sprayed onto the surface of loaded coal rail cars and coal storage piles to control dust by forming a crust. It is likely that further disruption of that crust in transport would preferentially cause particles from that crust to be what is blown out into the environment. Therefore, while chemical suppressant concentrations may be low relative to the entire contents of the coal car or storage pile, they may have a disproportional effect on the adjacent environment. Furthermore, interactions with the environment may be a process that involves the surface of the particles, that is to say a coating comprised primarily of the chemicals in the coal suppressant material, and not the particle composition in its entirety.

At the terminal: If chemical dust suppressant containing water was sprayed on the coal to control dust as it was being loaded, it might be coal particles coated with those chemicals that would form a film on the water, be pulled down through the water column into the lower benthic zone, or rain down upon the (drier) intertidal marine zone. Also, at this point, the carrier solvent chemical(s) in the freshly applied chemical suppressant may be more significant than they would be after lengthy transport and air exposure.

3. **Coal dust suppressants coating coal dust particles may enhance absorption of harmful constituents of coal by biological organisms.**

Rationale: A coating of chemical dust suppressant on the surfaces of coal particles might serve to enhance absorption across biological membranes of both the chemical dust suppressant materials themselves and possibly also materials of concern such as polycyclic aromatic hydrocarbons (PAH's), metals and other materials dissolved into this coating from the underlying coal particle. Surfactants present in the chemical dust suppressant mixtures could serve as "wetting agents" that would aid this process.

4. **Leachate from coal may incorporate more harmful chemical constituents as a result of the presence of coal dust suppressant chemicals percolating through the bulk coal material. Such leachates may be concentrated in certain siding areas along the tracks as well as in flow out of coal piles.**

Rationale: The surfactant properties of some coal dust suppressants may increase dissolution of potentially harmful chemicals out of coal stockpiles and into leachates.
In winter, these coal trains must acquire quite a bit of moisture from snowfall coming over the Cascades. Given the temperatures inland from there, some of this liquid may become frozen. This would inhibit unloading of the coal cars. Apparently in some areas the rail yards construct thawing sheds with huge infrared heaters. Delaying arrival at the terminal by having the trains spend some time on sidings might serve as a less expensive thawing and drip dry operation. At these siding locations, leachate coming out of the bottoms of the coal cars might be more concentrated and thus more significant. Given the way that the track runs right along the sound, rail sidings could be very close to Puget Sound or Bellingham Bay as the trains need to stage to get to the terminal. Coal dust suppressant containing coal leachates could reach significant concentration levels in these areas.

Coal piles at the terminal are likely to also be treated with coal dust suppressants. In the often rainy climate of Whatcom County, Washington State, considerable opportunity for leachate production would occur.

5. **A clear chain of responsibility for coal dust suppressant selection, application and monitoring should be required, from mine to terminal.**

Rationale: There appears to be a frequently complex and convoluted chain of ownership, control and responsibility for the coal from mines to the export ports. Dust suppression in general has a long and troubled history of toxicity. In some cases, chemical waste materials have been used as suppressants. (See Reference B, below). Thus, careful monitoring should be done to determine actual composition and concentrations of coal dust suppressants used all along the supply chain. This Gateway Pacific Terminal/Custer Spur EIS should be comprehensive, and include any

applications of chemical dust suppressants that may have occurred beginning at the mining site, and continuing through the various steps of transport and storage, as well as at the terminal.

BNSF sets standards as to which chemical toppers should be used, but BNSF passes responsibility for such application back to the shipper:
" Shippers are responsible for securing their freight for transit by rail."
"Under BNSF's loading rule, a shipper will be deemed to be in compliance with BNSF's loading requirements if the shipper loads coal cars using BNSF's Load Profile Template and also ensures that an acceptable topper agent is properly applied to the loaded coal at an effective concentration level and in accordance with the manufacturer's specifications. An acceptable topper agent is one that has been shown to reduce coal dust releases by 85%"

From Appendix B (See reference A, below):

Acceptable Topper Agents and Application Rates

Topper Agents (1)	Concentration Rate per Car (2)	Total Solution Applied per Railcar (3)
Nalco Dustbind Plus	2.0 gal	20 gal
Midwest Soil-Sement	1.25 gal	18.75 gal
AKJ CTS-100	1.36 gal(4)	15 gal
AKJ CTS-100C	1.36 gal(4)	15 gal
Rantec Capture 3000	2.5lbs	20gal
MinTech Min Topper S+0150	1.1gal	20gal

Item 100 section 3 B of the BNSF report (reference A) below uses the term “surfactants” to describe the toppers:
“Shipper ensures that an acceptable topper agent (e.g., surfactant) will be properly applied to the entire surface of all loaded coal cars at an effective concentration level and in accordance with the manufacturer’s specifications. An acceptable topper agent is one that has been shown to reduce coal dust loss in transit by 85%. Appendix B to this publication lists the topper agents that meet this criteria.”

Some of the suppressant formulations may contain materials more aptly described as “glues”. Some additives may be considered proprietary information by the manufacturer. Some may contain biocides (as preservatives).

BNSF penalizes shippers if the coal is not completely dumped from the cars at the terminal and more efforts to remove it are needed (See reference A). This may prompt shippers to use additional additives to enhance "release". These materials should also be investigated.

At the port, dust suppression seems to rely on fine mist fog sprayers using water and apparently frequently also surfactants. (See reference E). These need to be characterized and monitored. In section 4.5.5.3 of the Gateway Pacific Terminal Revised Project Information Document, (See Reference F, below), under *"Dust Control at Commodities Stockpiles"* the document states that:

"Dust control measures to be implemented at stockpiles would consist of a combination of compaction, fogging systems, water sprays, perimeter soil berms, regular pavement sweeping and/or application of chemical surfactants."

The chemical composition of the surfactants to be used does not seem to be specified.

6. Coal Dust Suppressants may have impacts that may include areas offsite from the terminal, other coal storage areas and along rail lines. To aid in risk reduction, the chemical constituents of coal dust suppressant materials, and the timing and means of application, should be public information.

Rationale: According to the EPA:
"Public disclosure of RMPs [risk management plans] *including OCA* [offsite consequence analysis] *information would likely lead to significant reduction in the number and severity of accidental chemical releases. In addition, widespread access to OCA information by all stakeholders would serve the function Congress originally intended in the Clean Air Act Amendments — to inform members of the public and allow them to participate in decisions that affect their lives and communities. The public is not likely to generate such information on its own, and thus the greater the public access to OCA information, the more likely potential public safety benefits would be realized. "* (See reference G, below)

Therefore, public disclosure of the chemical ingredients used in coal dust suppressants would be likely to lead to more ability to monitor such ingredients in the environment over time, and also generate discussions regarding suppressant use that could lead to product improvements. In this case the coal dust suppressant releases might be more in the nature of an ongoing low level release over time than as specific discrete accidents, but the same sorts of risk analysis conclusions would apply.

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