## Justin Lytle

Kerry,

I've been thinking a lot about the feasibility study at the Occidental Chemical Corporation (OCC) site and want to offer my comments to Washington's Department of Ecology.

I'm primarily concerned about all the things we don't know about this highly complex site. While, thankfully, most of the pore water samples that OCC collected showed relatively low levels of chlorinated volatile organic chemicals (CVOCs) at the present time, I am still concerned because there are so many unknowns:

1. What will the CVOC and caustic plumes do over time? The FS indicates that OCC's plan is to leave the majority of this material in the ground.

2. How safe is it to assume that the plume will never change direction and/or be released? The plume is moving, is not far from a steep underwater slope where currents and landslides shape the contours of the sediment, and our region is located above a tectonic subduction zone--one that has historically caused some very strong earthquakes in the past.

3. Are we absolutely confident that the sheet pile wall that OCC proposes will be an absolutely impermeable barrier? I've seen data from Joyce Mercuri (Dept. of Ecology) that arsenic is now found on both sides of the sheet pile wall at the Arkema site in the Port of Tacoma. I'm also concerned that the depth of the proposed sheet pile wall may be too shallow, given that the plume has descended to 160' over time and continues to move today. To what depth do piles need to be driven to keep the pollution in place indefinitely?

4. How much groundwater extraction will be "enough" for the community to have a high level of confidence that the risks have been permanently mitigated?

The open-ended nature of these questions and others give me pause, such that I do not have total confidence in the cleanup that OCC has proposed.

There is a reasonable risk to the community that the proposed cleanup may not go far enough. When I consider that: (1) the scale of the pollution is truly massive; (2) the plume is located underwater and is spreading; (3) the plume is located near critical aquatic habitat and where humans work and live; and (4) the chemical nature of the plume is extraordinarily hazardous, I conclude that there are too many risks to present and future inhabitants of our community.

It's hard to think of a precedent for such a complex problem in Puget Sound. The challenges of this particular site are so unique and the costs of getting things wrong are so great that I ask that the Department of Ecology request that OCC go further to provide additional "insurance" against future problems that are related to this site.

We need to err on the safe side in this case because the risks are too numerous and significant to always assume that the best outcomes will occur. I realize that this will likely cause OCC to bear additional expense, but the health of people, the biota, and economy in and around Commencement Bay are also a part of the equation.

Sincerely, Justin Lytle Justin C. Lytle Associate Professor Chemistry Department Pacific Lutheran University 12180 Park Ave S Tacoma, WA 98447 Office Telephone: 253-535-7555