Health Impact Assessment:
Proposed Cleanup Plan for the Lower Duwamish Waterway Superfund Site
Summary of *Advance HIA Report*—May 2013

Photos, left to right: Patrick Robinson, *West Seattle Herald; Paul Joseph Brown; Paul Joseph Brown;* BJ Cummings, Duwamish River Cleanup Coalition/TAG

BACKGROUND

More than a century of industrial and urban wastes have contaminated Seattle's lower Duwamish River. The Environmental Protection Agency (EPA) placed the lower Duwamish River on the Superfund List in 2001. On February 28, 2013, EPA released its Proposed Plan for cleanup of the site. EPA will accept public comment on the Plan until June 13, 2013.

The Plan calls for capping in place or removing highly contaminated river sediments, plus enhanced and natural recovery for moderately or low-level contaminated sediments. Resident fish and shellfish will be less contaminated but probably still unsafe for human consumption, even after the 17-year period of active cleanup and monitored recovery.

HEALTH IMPACT ASSESSMENT (HIA)

Three partner organizations—UW School of Public Health, Just Health Action, and the Duwamish River Cleanup Coalition/Technical Advisory Group—have conducted a Health Impact Assessment of EPA's proposed Plan. This Summary describes the first set of findings and recommendations, presented in the *Advance HIA Report*. A *Final HIA Report* will follow, to be submitted to EPA in June 2013.

The HIA has focused on four vulnerable populations whose health and well-being might be affected by the proposed cleanup. The HIA has been guided by resident and Tribal advisory committees, individual community advisors, and a "liaison committee," with representatives from EPA, other agencies, and potentially responsible parties. Focus groups were conducted with Duwamish Tribe members and urban subsistence fishers.

WHOSE HEALTH MIGHT BE AFFECTED BY THE CLEANUP?

Local residents: Two residential neighborhoods, South Park and Georgetown, border the Duwamish River and Superfund site. A high percentage of residents are foreign-born and people of color, particularly in South Park. Average household income in both neighborhoods is much lower than the county average, and poverty rates are higher.

Health status is relatively poor compared to the rest of Seattle, with higher existing rates of child asthma hospitalization, diabetes, cardiovascular disease, and lung cancer. There are also more industrial emissions, contaminated sites, and vehicular pollution than in the rest of the city.

Affected Tribes: Three Native American Tribes are potentially affected by the cleanup. The Duwamish Tribe's ancestral lands include the Duwamish River watershed. The Muckleshoot and Suquamish Tribes are federally recognized Tribes with treaty-guaranteed, usual and accustomed fishing places in the central Puget Sound region. Both Tribes actively manage seafood resources on the Duwamish River.

There are no publicly available health data for these Tribes. However, census and health data for Native

Americans in Washington State and King County reveal high levels of health problems and risk factors including poverty, unemployment, infant mortality, smoking, obesity, diabetes, heart disease, cirrhosis, asthma, and mental distress.

Subsistence fishers: Many people fish on the Duwamish River for salmon, which are non-resident fish and considered safe to eat. However, some people catch resident fish and shellfish as a food source. This population includes Asian and Pacific Islanders and other immigrant communities and people of color; low-income, homeless, and food-insecure populations; and urban American Indians and Alaska Natives (aside from the affected Tribes).

Workers in local industries: HIA assessment of this population is still in progress and will be reported later in the *Final HIA Report*.

WHAT HAS THE HIA FOUND SO FAR?

The proposed cleanup will reduce health risks from seafood consumption and contact with sediments and the shoreline. However, residual contamination in sediment, fish, and shellfish will still be higher than Puget Sound background after cleanup, and EPA predicts resident seafood will still be unsafe for human consumption. The necessary fishing advisories will be more restrictive than elsewhere in Puget Sound, will be required for at least 40 years, and could persist in perpetuity.

- **Contaminants spread during construction**
  The health concerns related to cleanup construction activity include possible escape of contaminants outside construction zones. The magnitude of this appears low, however, if environmental dredging technologies, best management practices, and skilled operators are employed.

- **Local residents**
  Most local residents do not eat resident fish from the river, but many visit beaches. EPA predicts the cleanup will approach but may not meet goals for arsenic contact on some publicly accessible beaches. The existing health risk and any risk after cleanup should be limited and manageable with wash facilities at public beaches.

  Construction-related increases in air and noise pollution, and in rail and truck traffic, could affect the health of local residents. However, with the proposed construction strategy, updated fuel standards, and standard EPA policies, there should be limited impact on local residents, beyond the existing high levels of pollution and traffic.

  Cleanup construction will generate new jobs, with beneficial impacts on health for those employed. It is uncertain whether or how many jobs will be given to local residents.

  Environmental improvements from the cleanup will increase aesthetics of the river and surrounding areas. This may spur reinvestment in Georgetown and South Park and revitalization opportunities, which we will discuss in our *Final Report*.

  Gentrification often occurs alongside community revitalization and is already occurring in Georgetown and South Park. Any cleanup-spurred reinvestment will contribute to this trend. Gentrification can bring health-favorable community benefits. However, these are most likely to benefit higher-income residents, and harmful impacts are most likely to affect lower-income residents.

- **Affected Tribes**
  Tribal health consequences of chemical contaminants are likely to be substantially worse than projected by EPA risk assessment and predictive models. These models only account for biomedical disease outcomes and do not incorporate fundamental aspects of Tribal health and well-being, such as the importance of accessibility to local natural resources, maintenance of cultural traditions, and the significance of self-determination. The risk assessment also does not consider that river-related risks are compounded by existing Tribal health disparities and cumulative risks from chemical and non-chemical stressors.

  Furthermore, although the cleanup will create a cleaner environment for all, inequity between the general population and the Tribes may actually increase. Resident seafood consumption will be relatively safe at a rate typical for the general population rate (e.g., 1 meal per month), but not at the Tribes' seafood consumption rates.

  Institutional controls, such as fish advisories, restrict how much seafood can be safely harvested. These restrictions may violate Tribal fishing rights. They also may affect food security, prompting some Tribal members to eat less healthful foods. Physical health may still be affected, since some Tribal members may harvest fish in spite of warnings, to protect their cultural and spiritual health.

  It is highly likely that habitat renewal will benefit Tribal health, because the environment and species of cultural importance will be enhanced. This will allow more ceremonies on the river, as well as pride, owner-

ship, and empowerment, all of which are important determinants of Tribal health.

- **Subsistence fishers**
  Fishing practices could be affected substantially during and after active cleanup. Urban subsistence fishing is poorly characterized, but people fish in many local waters, including the Duwamish River, and in spite of advisories and posted signs. Reasons for fishing and for choosing locations include a wide variety of cultural, traditional, practical, aesthetic, and convenience influences.

  It is very likely that some fishers and their families will be exposed to chemical contaminants in seafood during and after the cleanup. Fishing activity might decrease during active cleanup, but it is likely that some people will continue to fish there. Many alternative locations are subject to fish advisories, particularly within close travel distances. After the active cleanup, the cleaner and restored habitat may entice fishing. Although seafood will pose less health risk at that point, the persisting risks could still be substantial for people with high rates of fish consumption.

  Some subsistence fishers who are not able to fish elsewhere or purchase fish will likely experience food and nutritional insecurity. A fish diet has health benefits, particularly for children, and these benefits can be lost if fish consumption is reduced. Other protein sources cost more than self-caught fish, leading to economic hardship. A dietary void could be filled with cheaper, less healthful choices.

  Social and cultural traditions could be disrupted if fishers reduce or discontinue fishing. There is not enough information to assess how likely this would be, but the loss of social ties could be an important impact on health and well-being.

  These potential impacts on subsistence fishers would pose disproportionate harm for lower-income people, people of color, immigrants, and non-English speakers, and particularly for children.

WHAT'S MISSING FROM THIS PICTURE?

Identifying information gaps is an important goal for any HIA, almost as important as identifying health impacts. We describe these in the Advance Report and will discuss further in our *Final Report*.

The proposed Plan is critically dependent on institutional controls to protect human health during and after cleanup of the river. However, there is a striking contrast between the extensive effort and information to characterize cleanup efforts, and the limited rigor in planning for or evaluating institutional controls. In fact, the institutional control plan is only a plan to make a plan. The health consequences of residual chemical contamination and institutional controls are potentially substantial, and these could pose disproportionate harm for the Tribes and lower-income subsistence fishing households. It is not possible to adequately assess these potential health impacts, given the gaps in information.

Another important gap in the Plan is the lack of formal connection to a source control plan. The cleanup goals for contaminant reduction, and the certainty of achieving those goals, depend critically on the timing and extent of source controls. It is not possible to fully assess the potential health impacts of residual contamination without knowing the timing and extent of source controls.

OPPORTUNITIES

Seattle and the Puget Sound region are at the cusp of a new era. The Duwamish River and Valley could become a regional asset and symbol of pride. The river cleanup and restoration could be a national model for healthful and sustainable coexistence of industry, Tribes, and community. Without planning, however, some pressures could create or aggravate disparities. Our *Final Report* will assess opportunities and pressures, and give recommendations to promote equitable revitalization.

EQUITY

It is critical that there be meaningful and collaborative participation with the affected communities in all efforts to prevent harm from the cleanup, maximize benefits, and promote health equity.

The City of Seattle and King County are Potentially Responsible Parties for the cleanup, and they are also responsible for protecting and improving the health and well-being of all people in their jurisdictions. At face value, cleaning up the Duwamish River will address both responsibilities. However, without targeted interventions, the proposed cleanup could result in unanticipated harms to vulnerable populations, and continue or even exacerbate existing health inequities.

The EPA, City, and County each have prominent policies that make commitments to consider equity, race, and/or justice in decision-making. We call upon each to uphold these commitments in planning the cleanup and related actions, and in planning for predictable health effects of those actions.

RECOMMENDATIONS DIRECTED TO EPA

Construction measures

- Negotiate transport routes and associated mitigation measures for cleanup-related truck and rail traffic with potentially affected residents.
- Use modern clean engines or those with best available emission controls, cleanest available fuels, and "green remediation" techniques to minimize air emissions, plus effective noise and light minimization measures during active cleanup.

Jobs for community members

- Provide cleanup job training and placement assistance to local community members.

Institutional controls

- Apply institutional controls, including educational signage and washing stations, at local beaches until health protective standards are met.
- Institutional controls should go beyond restrictive and informational actions, such as fish advisories. Interventions should emphasize positive alternatives, such as identifying, encouraging, and providing options for safe fishing and healthful fish consumption. There is a clear need for innovative thinking.*
- Efforts to promote safer fishing should acknowledge that the target audience is more than just people who currently fish on the Duwamish River, and should include people who may fish there in the future.
- All efforts to provide information and promote safe and healthful fishing options should a) be culturally appropriate for each audience, b) be designed to help people make informed choices, and c) engage and empower people to participate meaningfully in planning, implementation, and monitoring for success.

Actions to protect Tribal health

- Collaborate with Tribes to more fully address their health concerns about the river cleanup.
- Restore Tribes' traditional resource use in accordance with Treaty Rights.
- Ensure that site-related Institutional controls are temporary, not permanent.
- Establish a "Revitalization Fund" to enhance Tribal empowerment and health, until institutional controls are removed.

RECOMMENDATIONS DIRECTED TO CITY OF SEATTLE AND KING COUNTY

Equity policies

- Ensure equity in all policies and efforts for environment and community development, in accordance with Seattle's Race and Social Justice Initiative and King County's Equity and Social Justice Ordinance.

Gentrification pressures

- Coordinate management of future reinvestment and urban development by formalizing a coalition of agencies and community organizations to monitor and guide new development.
- Preserve affordability and produce affordable housing.*
- Promote and protect home ownership.*

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WHERE CAN YOU GET MORE INFORMATION?

Advance HIA Report and Technical Reports: http://deohs.washington.edu/hia-duwamish

EPA *Proposed Plan*: http://yosemite.epa.gov/r10/cleanup.nsf/sites/lduwamish

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* Possible options are described in the Advance Report and in the applicable Technical Report

Photos, left to right: BJ Cummings, Duwamish River Cleanup Coalition/TAG; Paul Joseph Brown; Linn Gould, Just Action Health; Paul Joseph Brown