# RESPONSIVENESS SUMMARY

**Oakland Bay**
**December 6, 2010 – January 21, 2011 Public Comment Period**

***Oakland Bay Sediment Investigation Report***

**Prepared by**
**Washington State Department of Ecology**
**Southwest Regional Office**
**Toxics Cleanup Program**
**Lacey, Washington**

**March 2011**

## Contents

## Introduction

Location:  Oakland Bay, Mason County, Washington
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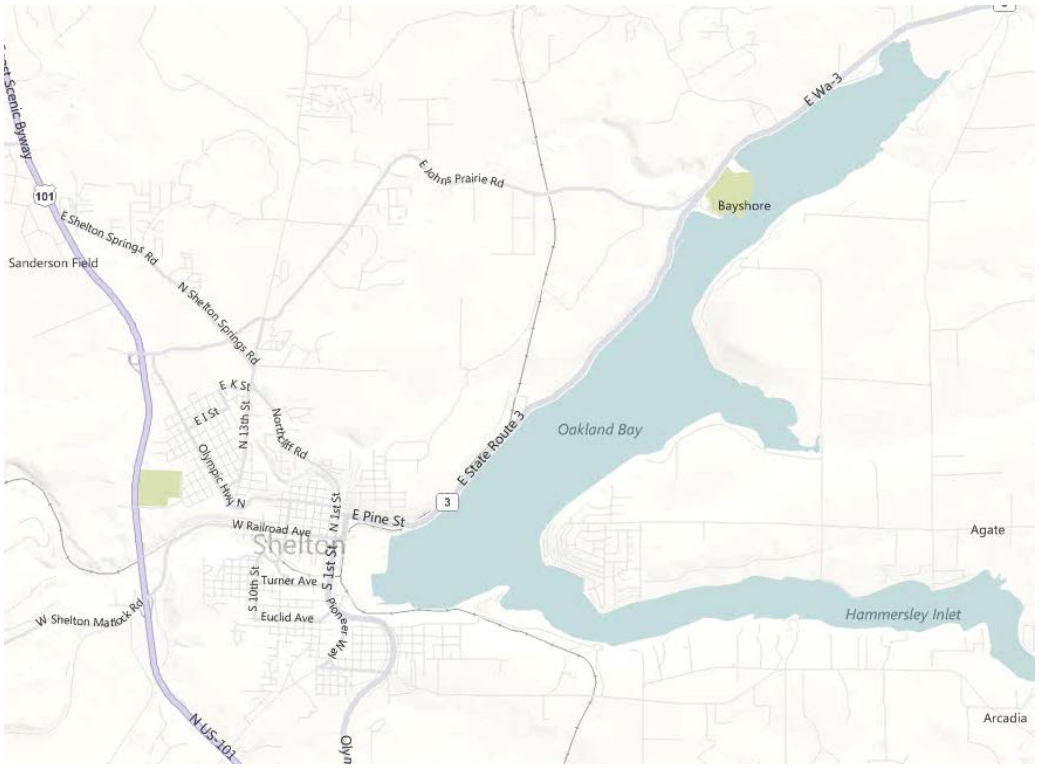
As part of Governor Gregoire's efforts to restore the health of the Puget Sound, the Department of Ecology (Ecology) Toxics Cleanup Program is investigating sediment pollution in seven bays. These bays include Oakland Bay, Budd Inlet, Port Angeles Harbor, Port Gardner, Port Gamble, Fidalgo and Padilla Bays, and Dumas Bay. The goal is to locate, prioritize and clean up contamination to protect human health and maintain sustainable use of valuable natural resources.

Ecology chose Oakland Bay because Shelton Harbor has a history of heavy industrial use and previous studies have provided evidence of contamination.  In addition, Oakland Bay is one of the most productive shellfish growing areas in the country**.**

Industrial uses of Oakland Bay resulted in sediment contamination in Shelton Harbor and surrounding areas. Chemicals, woodwaste, and waste water from timber and wood product manufacturing industries have been discharged into Oakland Bay.

Previous investigations revealed the presence of several contaminants above state standards including; metals, semi-volatile organic compounds, petroleum products and wood waste contamination.

## Site Location



## Overview of the Sediment Investigation Report

In 2008 and 2009, Ecology's Toxics Cleanup Program conducted sediment sampling to investigate the health of the sediments in Oakland Bay. Ecology released the results of the study in the Sediment Investigation Report, which was issued for public review and comment in December 2010.

The Sediment Investigation Report contains information about:

- Location and amount of chemicals and woodwaste in the sediment.
- Amount of sediment movement and deposition in Shelton Harbor and Oakland Bay.
- Potential effects of sediment contamination on the health of creatures living on or in the sediment.
- Possible sources of dioxin found in sediment.

## Format of the Responsiveness Summary

Ecology has reviewed all comments received. Comments from different reviewers often covered the same topics. Ecology has responded to these common concerns in this responsiveness summary, organized into the following sections:

- **Summary of Public Involvement**
- **List of Commenters**
- **Responses to Common Concerns** – Comments from different commenters often covered the same topics. To reduce redundancy, comments addressing the same topic were grouped and addressed under a set of common themes.
- **Appendix A: Comments**

## Summary of Public Involvement

Ecology uses a variety of activities to increase public participation in the investigation and cleanup of Model Toxics Control Act (MTCA) sites. The public involvement process for this site provides for participation through stakeholder input, periodic distribution of fact sheets and other outreach materials, public meetings and presentations, and formal public comment periods. Ecology will use input provided by the community whenever possible.

Sediment sampling for the Sediment Investigation Report was finished in late 2008. During 2009, Ecology shared the raw data from the sampling with the Squaxin Island Tribe, the Oakland Bay Clean Water District, local and state agencies, and the shellfish and timber industries. Ecology further analyzed this data to develop the final Sediment Investigation Report. Ecology also requested that the Washington Department of Health (DOH) evaluate the potential for human health effects from eating shellfish or contacting sediments.

The Sediment Investigation Report and the sediment and shellfish health consultation reports were finalized in fall of 2010. Ecology met with the Squaxin Island Tribe, the Oakland Bay Clean Water District, local and state agencies, and the shellfish and timber industries in late 2010 and held a public meeting about the Sediment Investigation Report on December 15, 2010. The comment period for the report ran from December 6, 2010 – January 21, 2011. A fact sheet about the report was mailed to residents, property owners and tenants within ¼ mile of Oakland Bay, as well as other stakeholders. This responsiveness summary provides written comments received during the comment period and Ecology's responses.

## List of Commenters

| Date | Commenter |
|---|---|
| 12/15/2010 | John Smith |
| 12/22/2010 | Tom Davis |
| 1/5/2011 | Joyce Hannum |
| 1/6/2011 | Phil Rousseau |
| 1/11/2011 | Constance Simpson |
| 1/12/2011 | Constance Simpson |
| 1/13/2011 | Deborah Soper |
| 1/14/2011 | Patricia Jerrells |
| 1/15/201 | Claude Bennington |
| 1/21/2011 | Frances Prescott |

## Responses to Common Concerns

## I. Concerns About Levels of Dioxin

Several commenters expressed concerns about the impacts of dioxin on human health and the possible impacts on area residents. These commenters stated that unusually high levels of dioxin in Oakland Bay and Shelton Harbor should not be considered acceptable.

**Ecology Response**

Ecology agrees that dioxins are toxic, persistent, and bioaccumulative chemicals that need to be addressed in Oakland Bay. "Persistent" means that dioxins remain in the environment for a long time without breaking down. "Bioaccumulative" means that dioxins tend to build up in the bodies of people and animals. Visit www.ecy.wa.gov/programs/swfa/pbt/ for more information on persistent, bioaccumulative toxics.

The Toxics Cleanup Program conducted the sediment study in Oakland Bay to find out whether dioxin or other toxic chemicals are present at levels that may need to be cleaned up. Under the State of Washington Model Toxics Control Regulation, the goal for cleanup at toxic sites is to reduce the level of cancer risk from each chemical to less than 1 in 1,000,000 (one additional potential cancer per one million people). This is a very low, essentially negligible, risk level. The toxicity level of dioxin is high enough that often even "background" levels of dioxin in Puget Sound result in a risk greater than 1 in 1,000,000, according to risk assessment calculations. "Background" levels are widespread, low levels of dioxin that are present in sediments from many years of industrial uses in the Puget Sound region. A 2008 study found that the 'background' level of dioxin in Puget Sound is about 4 parts per trillion (ppt)[1].

The levels of dioxins found in Shelton Harbor and Oakland Bay are well above background levels for Puget Sound. Therefore Ecology agrees that dioxin in Oakland Bay needs to be addressed.

Because of the large size of the area and widespread contamination throughout Oakland Bay, it will take some time to determine the best approaches to reduce risk and exposure. It is unlikely that all sediments that contain dioxin will be able to be removed. But Ecology intends to pursue actions in Oakland Bay and Shelton Harbor to reduce exposure to contamination as much as possible. Some actions that Ecology will pursue include:

- Identifying liable parties for the contamination;
- Evaluating removal of hot spots of the higher dioxin levels, especially in Shelton Harbor;

[1] The "background" level of dioxin for Puget Sound was calculated using dioxin data from sediments at 97 locations in Puget Sound. The samples used for this were intentionally taken in areas that are not near point sources of pollution. For more information about the background calculation and samples, visit the U.S. Army Corps of Engineers Seattle District's Puget Sound Background Threshold Value - Statistical Calculation document.

- Preventing higher levels of dioxin in deeper sediments and within Shelton Harbor from being redistributed to the surface or other parts of the bay;
- Identifying potential continuing sources of contamination;
- Evaluating whether there are other foods that are commonly consumed from Oakland Bay and need to be tested; and
- Understanding the potential for cleaner sediments to naturally accumulate over the contaminated sediments, and monitoring to determine if that is occurring.

All documents developed for cleanup will be issued to the public for review and comment.

Note that the Department of Health (DOH) evaluated the sediments and shellfish from Oakland Bay to determine if contaminant levels are a health threat to people. DOH concluded that exposure to sediments and eating shellfish from Oakland Bay is not likely to produce harmful health effects. This is also true for people who eat shellfish from the area in large quantities. It is good to keep in mind that the levels that DOH uses in their health assessments are different than the ones Ecology uses to determine the need for cleanup. That is because DOH looks at current conditions and puts them into the perspective of the risks that we face day to day, whereas the goal of the state cleanup law is to reduce overall risk throughout the environment - to clean up our state land and waters to levels that pose very low, essentially negligible, levels of risk. Please see pages 6-10 for more information on the safety of shellfish.

## II. Safety of Shellfish

Several commenters expressed concerns that shellfish grown in Oakland Bay are not safe to eat. They referred to findings that food is a common source of dioxin exposure and that dioxins are present in Oakland Bay. Ecology received a number of comments expressing concern over DOH conclusions that the levels of contaminants found in shellfish from Oakland Bay pose a very low human health threat and people do not need to reduce the amount of shellfish that they eat. Some commenters felt that the DOH statements about shellfish health risks indicated Ecology is not concerned with the levels of dioxin in Oakland Bay.

**Ecology Response: Safety of Shellfish**

When DOH evaluates the potential health risks from eating seafood from contaminated areas, they follow risk assessment methods set out by the Environmental Protection Agency (EPA) and the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is the federal public health agency responsible for evaluating and preventing risks to people from exposure to hazardous substances at cleanup sites. DOH calculates the risk based on standard risk assessment equations. To determine if they need to advise people to limit consumption, DOH compares that calculation to levels that are accepted by the EPA. The DOH's health consultation documents for dioxins in shellfish and for contaminants in sediments can be found at http://www.doh.wa.gov/ehp/oehas/consults.htm#Mason.

To figure out possible health risks of eating food from a contaminated area, DOH looks at how much of a contaminant someone would eat. This is done by looking at the amount of a contaminant in the food and how much of that food someone would eat.

In Oakland Bay, DOH determined how much dioxin is in shellfish by sampling the shellfish tissue. Then DOH studied how much dioxin a person might be exposed to from eating shellfish. They looked at how much people eat, how often they eat it and over how long a time it is eaten, among other factors. DOH uses conservative consumption scenarios (the amount of a specific food someone might eat in a day) – that is, they assume the worst case scenario. The conservative assumptions that were used for Oakland Bay are described at the end of this section.

DOH found that the levels of dioxin in Oakland Bay shellfish pose a very low potential cancer risk even if someone eats a large amount. They also found that eating the shellfish would result in an average daily intake of dioxin that is well below the federal level for non-cancer health effects. ATSDR reviewed the dioxin in shellfish health consultation and agreed with DOH's findings that people do not need to reduce the amount of shellfish they eat from Oakland Bay.

Cancer Risk

DOH evaluates the potential cancer risk using a mathematical risk equation. The equation results in an "increased chance of cancer" risk level. This represents the ***additional*** risk a person might have for getting cancer from eating the shellfish, over and above the risks from day-to-day life. In general, the day-to-day cancer risk in the United States is 1 in 2 for men and 1 in 3 for women. (Day-to-day risk includes risk from the low levels of dioxin and other chemicals that are already present in the environment, as well as other cancer-causing factors in the environment).

Based on the calculations done by DOH, the additional cancer risk for a high-end consumer (130 grams/0.29 pounds of clam meat daily for 70 years) of Oakland Bay clams is 2.6 in 100,000. DOH determined that this risk is well below the highest risk considered acceptable by the EPA, which is 1 in 10,000[2].

Many commonly consumed foods, such as beef, turkey, chicken, milk, and butter, also contain low levels of dioxin. The U.S. Department of Agriculture has studied the amount of dioxins in typical groceries and has found that they have decreased over the past two decades. However, low levels of dioxin still persist in food. Table 1 shows the amount of dioxin found in Oakland Bay clams compared to levels in beef, pork, turkey and chicken (from a study done in 2007-2008[3] .)

[2] EPA, Office of Solid Waste and Emergency Response, Directive 9355.0-30: http://www.epa.gov/oswer/riskassessment/pdf/baseline.pdf

[3] Huwe, et. al. (2009) Survey Of Polychlorinated Dibenzo-P-Dioxins, Polychlorinated Dibenzofurans, And Non-Orth-Polychlorinated Biphenyls In U.S. Meat And Poultry, 2007-2008: Effect Of New Toxic Equivalency Factors On Toxic Equivalency Levels, Patterns, And Temporal Trends. *Journal of Agriculture and Food Chemistry, 75, 11194-11200*.

**Table 1**

| **Product** | **# of Samples** | **Average (parts per trillion -ppt)** |
|---|---|---|
| Beef | 139 | 0.55 |
| Pork | 136 | 0.14 |
| Chicken | 151 | 0.12 |
| Turkey | 84 | 0.36 |
| ***Oakland Bay Clams*** | ***14*** | ***0.11*** |

Non-Cancer Risks

DOH evaluated non-cancer risks by comparing the dose of dioxin a person may receive each day from eating Oakland Bay shellfish (manila clams) to the ATSDR 'minimal risk level' (MRL) for dioxin. The MRL is the amount estimated by ATSDR that could be consumed daily without causing measureable harmful (non-cancer) effects. The MRL for dioxin is based on studies of developmental effects in monkeys. The MRL value is 1 picogram per kilogram of body weight per day (1 pg/kg/day). (One picogram is equal to 0.000000000001 gram). The high-end dose calculated for consumption of shellfish (i.e., for the people who would eat the *most* shellfish daily) from Oakland Bay is 0.175 pg/kg/day. Since this is well below the MRL, DOH determined that the risk of non-cancer effects from Oakland Bay shellfish is very low.

Cleanup Concerns In Relationship To DOH Shellfish Evaluation

DOH evaluates the potential health risk from eating foods from contaminated areas based on the present-day levels of contamination. They must look at current conditions and put them into the perspective of the potential risks that we face day to day.

The DOH assessment of the shellfish risk does not mean that the Department of Ecology is unconcerned about the sediment pollution in Oakland Bay. Under the State of Washington Model Toxics Control regulation, the level of risk considered acceptable for *cleanup* of sediments is 1 in 1,000,000 (one in one million). This is quite a bit lower than what would cause a health advisory for fish consumption. The reason for this is that the goal of the state cleanup law is to reduce the overall risk in the environment; to clean up our state land and waters to levels that pose very low, essentially negligible, levels of risk.

In the case of Oakland Bay, it is unlikely that all sediments containing dioxin will be able to be removed. But the Department of Ecology intends to pursue actions in Oakland Bay and Shelton Harbor to improve conditions as much as possible. Some actions that Ecology will pursue include:

- Identifying parties potentially responsible for the contamination;
- Evaluating possible removal of 'hot spots' of the higher dioxin levels, especially in Shelton Harbor;
- Preventing higher levels of dioxin in deeper sediments and within Shelton Harbor from being redistributed to the surface or other parts of the bay;

- Identifying and stopping potential continuing sources of contamination such as industrial storm drains;
- Evaluating whether there are other foods that are commonly consumed from Oakland Bay that need to be tested; and
- Understanding the potential for cleaner sediments to naturally accumulate over the contaminated sediments, and monitoring to determine if that is occurring.

Assumptions Used For DOH Risk Calculations

The factors that go into the cancer risk equation and evaluation of non-cancer effects for Oakland Bay shellfish are explained below.

1) Concentration of the chemical in the seafood

DOH tested Manila clams, Pacific oysters, Kumamoto oysters, and mussels, since those are the main species eaten from Oakland Bay. They took 14 samples of clams, 6 samples of Pacific oysters, 2 samples of Kumamoto oysters, and one sample of mussels. Each sample was made up of the meat from 30 shellfish. The oyster and clam samples were taken from shellfish growing areas along the shores of Oakland Bay. The mussel sample was taken from the mussel raft near Chapman Cove. Based on discussions with the Squaxin Island Tribe, bottom fish and crabs are not commonly eaten from Oakland Bay, so they were not tested.

The samples were tested for dioxins/furans (commonly called 'dioxin'). Dioxin consists of a family of related compounds, some of which are more toxic than others. A dioxin sample result is a sum of the individual compounds, after they are adjusted for their level of toxicity. The most toxic dioxin compounds are added in at their full value. Less toxic compounds are added in at a pro-rated value in relationship to the most toxic. For example, if one compound is only $1/10^{th}$ as toxic as the most toxic compound, it is added in at $1/10^{th}$ of the lab result value. The total sum is called a "toxicity equivalent", also known as the TEQ. This is the standard way that dioxin results are calculated and presented.

The results from the shellfish in Oakland Bay are shown below. Because dioxin is a very potent chemical (i.e., small amounts can have large effects), it is measured in parts per trillion (ppt), TEQ. One ppt is an extremely small amount. For perspective, one ppt expressed as a distance, time, or weight would be one foot in 189,393,939 miles; one second in 31,688 years; or one pound in 500 million tons.

**Table 2**

| Type of seafood | # of samples | Range (ppt - TEQ) | Average (ppt - TEQ) |
|---|---|---|---|
| Manila Clams | 14 | 0.05 – 0.27 | 0.11 |
| Pacific Oysters | 5 | 0.13 – 0.37 | 0.26 |
| Kumamoto Oysters | 2 | 0.3 – 0.6 | 0.45 |
| Mussels | 1 | -- | 0.17 |

Based on the sampling that was done, the shellfish do take up some dioxin from the sediments. However, they do not appear to take up or accumulate a large amount of the dioxin in their meat. Dioxin tends to accumulate mostly in the fat of animal tissue. Because shellfish do not contain much fat, the amount of dioxin they accumulate tends to be relatively low.

2) Consumption rate of the food

Estimating how much of the food is eaten is an important part of the risk evaluation. The high-end scenario that DOH looked at (representing the highest potential risk) for each shellfish species is shown below. The amount eaten for the high end consumer is based on a person consuming a *total* amount of 260 grams per day of seafood (about 9.2 ounces, or 0.6 pounds). This was an estimate from DOH, which is consistent with a study that was done of tribal fish consumption rates in 1996[4]. For the risk calculations, DOH assumed that 50% of the total seafood eaten consists of clams from Oakland Bay. For oysters and mussels, DOH assumed 1% of the total seafood eaten would be oysters or mussels from Oakland Bay.

The amounts used in the health evaluation are shown below. This assumes the *average* consumption, as if the food is eaten every day. The risk assessment evaluation assumes the average amount is eaten every day for 70 years.

| **Shellfish species** | **Average consumption – high end consumer (does not include shells)** |
|---|---|
| Manila Clams | 130 grams/day [105 pounds per year (approximately 7908 clams)] |
| Oysters | 2.6 grams/day [2.1 pounds per year (approximately 63 oysters)] |
| Mussels | 2.6 grams/day [2.1 pounds per year (approximately 63 mussels)] |

## III. Air Pollution Effects

Ecology received a number of comments about the amounts and types of air pollution discharged from current and/or proposed industry. Some commenters were particularly concerned that dioxins and other pollutants are being emitted by existing industry and will be emitted by proposed new biomass boilers. Several were concerned that at certain times of the year air pollutants remain concentrated around the city of Shelton and Oakland Bay.

A related concern was that air pollutants are deposited into Oakland Bay, Puget Sound, and Hood Canal by rain. Commenters expressed concerns about the effects on Puget Sound and

[4] Toy, K.A., et. Al. (1996) A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region.

Oakland Bay from this pollution and that proposed new biomass boilers will increase this problem.

**Ecology response**

Air Pollution

Washington State law dictates that the Olympic Region Clean Air Agency (ORCAA) issues air permits for air discharges in Mason County. The Department of Ecology does not have authority to regulate these discharges, or to influence the decisions of ORCAA.

To be able to respond to public comments about air quality that were received for the Sediment Investigation Report, Ecology consulted with engineers from ORCAA. The information provided below is a summary of what we learned.

Before ORCAA determines whether to recommend a facility receive a construction permit, state and federal laws require them to compare possible air impacts from the proposed facility to air quality standards. ORCAA also must evaluate proposed discharges for regional air impacts. ORCAA evaluated possible air impacts for the proposed ADAGE biomass boiler. They found that the proposed boiler's potential maximum emissions fall below amounts allowed under state and federal law. Therefore, ORCAA is recommending permitting the facility with certain conditions and monitoring requirements.

For a full description of the permitting process and the evaluations completed, please review the ORCAA staff recommendation at www.orcaa.org/news/biomass-projects/adage-biomass-facility/. The basic steps ORCAA took to evaluate the potential emissions, and ORCAA's conclusions, are:

1) *Evaluation of Best Available Control Technology (BACT).* BACT requires that emissions are controlled to the maximum degree available. BACT is evaluated for each pollutant and is determined by the permit agency (ORCAA) based on available proven technologies and energy, environmental, and economic costs. Using a database of emissions from similar equipment at other facilities, ORCAA determined that ADAGE selected the top-rated control option for each pollutant. ORCAA found that the resulting emissions of each pollutant would be the lowest possible given the currently available technologies.

2) *Evaluation of impacts to surrounding air (Ambient Air Impact Analysis) from "criteria pollutants"* (carbon monoxide, nitrogen oxides, particulate matter, and sulfur dioxide). ORCAA evaluated the potential impacts to surrounding air from the maximum amount of emissions that the proposed boiler could discharge. They studied ADAGE's application and found that the applicant:

    - Used appropriate air modeling methods;
    - Used background air data that was representative or conservatively high;
    - Evaluated the worst-case scenario; and

- Took into account the potential for cumulative impacts with other existing sources in the area.

ORCAA agreed with the applicant's demonstration that the emissions would not cause or contribute to violations of the National Ambient Air Quality Standards or Washington State air standards.

3) *Evaluation of impacts to surrounding air (Ambient Air Impact Analysis) from toxic air pollutants*. ORCAA evaluated potential maximum emissions from the facility to determine compliance with the Washington Air Toxics regulation (Chapter 173-460 WAC). Under the air toxics regulation, the facility must:

   - Show that best available emission control technology is used;
   - Quantify potential maximum emissions; and
   - Show that emissions are low enough to be protective of human health and safety.

   ORCAA reviewed the proposed control technologies and their effectiveness to address air toxics. ORCAA agreed that that proposed technologies represent best available controls for ammonia, organic toxins, metals, dioxin/furans, polycyclic aromatic hydrocarbons (PAHs), and acid gases (hydrochloric acid).

   The facility must also calculate the amounts of toxics that could be released under maximum operating conditions. This amount is calculated from the amount of each toxic substance that is emitted and the amount of time the facility operates. The "maximum" operating conditions are intentionally overstated in order to make sure that control technologies are still protective in the worst possible scenario. That is, the calculations assume the facility operates at its highest capacity continuously every day of the year, which is very unlikely to occur.

   Additionally, ORCAA evaluated the emission factors provided by ADAGE (amount of a toxic substance that the facility would emit). ORCAA used an EPA database of monitoring data from similar facilities to quantify emissions of individual compounds in order to ensure that actual emissions will be less than theoretical emissions. ORCAA evaluated the emission calculations for highest possible emissions at maximum operating capacity, and agreed that they were correct.

   The maximum emissions must then be shown to be low enough to protect human health and safety. Under the Washington Air Toxics Regulation, emissions are first compared with 'small quantity emission rates' (SQER). If they are below those rates, they are automatically considered protective of human health and safety.

   If emissions for any pollutant are above the SQER, modeling is required for that pollutant to determine if the concentrations of that pollutant in the air could be above acceptable levels. The modeling looks at the maximum amount that could be in the air after discharging from the stack. The acceptable level is called an 'acceptable source impact level' (ASIL). The ASIL is an amount that is considered protective of human health and

safety under the air toxics regulation. If the modeled levels are below the ASIL, the air emissions are considered to be protective of human health and safety. For more information about the acceptable levels and the process for evaluating air toxics, refer to Chapter 173-460 WAC (http://apps.leg.wa.gov/WAC/default.aspx?cite=173-460).

ORCAA determined that the calculated levels were above the SQER for several contaminants. Modeling was done for those contaminants. The modeled ambient air concentrations were compared to the ASIL to determine if the discharges of those contaminants are protective. ORCAA determined that all discharges, including dioxins, were below the either the SQER or ASIL levels. More information about the amount of toxics discharge and ORCAA's evaluation for the proposed biomass boiler can be found in Section 7 and Appendices 4 and 5 of ORCAA Staff Recommendation for the ADAGE plant permit (www.orcaa.org/news/biomass-projects/adage-biomass-facility/).

4) *Conditions and monitoring requirements.* The ORCAA staff recommendation includes many conditions and monitoring requirements. Condition #45 of the staff recommendation requires a source test of the boiler, once it is operating up to full capacity, to ensure that the dioxin limits are met.

The proposed ADAGE biomass facility is the only biomass boiler that is currently being actively evaluated for a permit. As most interested parties know, the comment period for the ADAGE recommendation from ORCAA recently closed. Ecology directed sediment study commenters to the ORCAA comment period for any comments about the proposed biomass boiler. ORCAA is currently evaluating the public comments and will be responding to public comments and questions received. Refer to the ORCAA web site (www.orcaa.org) for additional information about the permit process.

The application for the proposed Solomon boiler to be located at the Simpson facility is not yet complete, so ORCAA has not yet developed a staff recommendation for that facility.

Air Deposition into Oakland Bay

In addition to general concerns about air quality, there were also comments regarding the potential for more dioxin to enter Oakland Bay through air deposition. Some commenters pointed out that burning wood can release dioxin, and that wood burning businesses could be continuing to contribute dioxin to Oakland Bay.

Ecology agrees that there is evidence that burning wood can release dioxin. Dioxins are known to form at relatively low burning temperatures, which were common in older, less efficient boilers (and also in fireplaces, outdoor burning and wood stoves). It has been shown that burning salty wood at these lower temperatures contributes to forming dioxins. The chlorine in the salt and incomplete combustion from low-temperature burning can result in high levels of dioxin in the ash and air emissions.

Historically, wood that was burned in the boiler at Simpson Lumber (co-owned with Rayonier Pulp Mill until Rayonier closed in 1957) was commonly rafted and transported by water. This resulted in salt in the wood that was burned and dioxin in ash released from the untreated air

discharges. Starting in 1976, air pollution control devices were installed to capture ash and particulates. In 1986 the mill stopped burning salty wood. More modern, higher temperature boilers installed around 1986 also greatly diminished the amounts of dioxins formed.

Air deposition from the wood burners was not the only likely source of dioxin in Oakland Bay. The Rayonier pulp mill discharged untreated wastewater from its bleaching process to Shelton Harbor during its years of operation from 1927 to 1957. Bleach process wastewater from pulp mills is one of major historical sources of dioxin nationwide. For a short time in the late 1970s and early 1980s, some of the ash from the boilers was also discharged through the sewage plant directly into Oakland Bay. Ecology has been in contact with Simpson and Rayonier regarding their possible role in cleanup of the sediments.

Ecology believes that the high levels of dioxin in the bay today are the result of many years of untreated, uncontrolled sources. The likelihood of significant deposition of dioxin or other chemicals into the bay from the proposed biomass boilers is much less than from historical operations. Only clean wood would be allowed to be used as fuel in the proposed biomass boilers. Advanced pollution control devices and modern burning technologies using high temperatures also reduce potential dioxin releases to extremely low levels. Addendum 6 to the ADAGE permit application includes some information about the technology used to prevent discharge of dioxin from modern wood-fired boilers (www.orcaa.org/news/biomass-projects/adage-biomass-facility/).

The annual maximum estimated discharge of the two most toxic dioxin types from the ADAGE facility are 0.00071 pounds per year of tetrachlorodibenzo-p-dioxins and 0.003 pounds per year of 1,2,3,7,8-pentachlorodibenzo-p-dioxin (see Table A5.1, ORCAA staff recommendation (www.orcaa.org/index.php/download_file/view/439/87/). These amounts are unlikely to cause increased levels of dioxin in Oakland Bay sediments.

The ORCAA staff recommendation includes a requirement for ADAGE to test the boiler emissions for dioxin once the facility is up to full operating capacity. This is to ensure that the predicted low levels of dioxin are actually met.

Ecology does not believe that air emissions from wood-fired boilers are likely to cause sediment contamination from other chemicals besides dioxin. This is because other chemicals have not been found in sediment at levels above state cleanup standards in Oakland Bay, even from the years of untreated air emissions from historical facilities.

## IV. Funding Cleanup Efforts

Ecology received one comment that no further action should be taken on the dioxin issue at this time, and that state funds should not be spent on Oakland Bay dioxin clean up. The commenter felt that, if funds were available, they should be dedicated to address failing septic systems.

**Ecology Response:**

Because the levels of dioxin in Shelton Harbor and Oakland Bay are significantly higher than those found in other parts of Puget Sound, Ecology does not believe that taking no action to clean up dioxin is a desirable approach. However, at this time there are no plans to spend state money on cleaning up the dioxin in Oakland Bay. It is unlikely that any significant state funds will be spent on this cleanup in the future.

Under the state law, cleanup should be paid for by the parties causing the contamination. Ecology has begun discussions with Simpson Lumber Company and Rayonier regarding potential liability for eventual cleanup.

In the near-term, the Squaxin Island Tribe, City of Shelton, Port of Shelton, and Simpson Lumber Company are in the early stages of developing a habitat improvement plan for Shelton Harbor. This will include evaluating areas in Shelton Harbor for potential habitat improvement projects. These projects will also take cleanup into consideration. Ecology is participating in this process to ensure that cleanup is conducted in any potential habitat areas. Any plans that include cleanup will be subject to public review before they are implemented.

Some state, federal, and local government funds are being used to address failing septic systems. The Mason County Health Department receives state and federal funds to assist in their septic inspection program. Information about that can be found here: www.co.mason.wa.us/oakland_bay/index.php. In addition, some funding for the Shorebank Enterprise Cascadia septic loan fund comes from state and federal funds (www.sbpac.com/bins/site/templates/subtemplate.asp?_resolutionfile=templatespath|subtemplate.asp&area_2=Our%20Products%20%20and%20Services/ShoreBank%20Septic%20Loan%20Program).

## V. Other Concerns About Biomass Boilers

Several commenters expressed concerns about the effects of proposed biomass boilers. Concerns related to removing biomass from forests to provide fuel for the boilers included: less or no organic material would remain on sites, increasing the likelihood of erosion and landslides; increased stormwater runoff would harm local streams and Oakland Bay; streams would receive less organic matter and increased siltation, which would lead to the loss of salmon spawning habitat; and nutrients needed for a healthy forest ecosystem would be removed, hindering the ability of forests to re-grow. Other concerns about biomass boilers included: diesel exhaust from trucks would harm air quality; biomass incineration is not carbon neutral; stormwater runoff from the plant site would be polluted; and the boilers and trucks would create noise pollution.

**Ecology Response:**

Ecology conducted the Oakland Bay sediment investigation to investigate the health of the sediments in Oakland Bay and Shelton Harbor as part of the Puget Sound Initiative. The overall goal of the Puget Sound Initiative is to locate, prioritize and clean up contamination to protect human health and maintain sustainable use of valuable natural resources. Ecology recognizes that some citizens have strong concerns about potential impacts from the proposed biomass

facilities on forest health, climate change, stream health, and other issues. However, these subjects are beyond the scope of the sediment investigation which is the subject of this public comment process. Therefore, specific responses to those concerns are not provided in this responsiveness summary. However, resources for these topics are provided below.

Forest health/Biomass supply

The Department of Natural Resources (DNR) is the lead agency for forest practices and biomass supply. DNR is responsible for the sale of biomass from state lands and for permitting its removal from state and private lands. One of the goals of the forest biomass initiative is to ensure that biomass is removed from forests in ecologically sustainable ways and in a manner that does not harm ecosystems. For more information on DNR's biomass initiatives, fact sheets about biomass and permitting, and contact people, visit www.dnr.wa.gov/ResearchScience/Topics/OtherConservationInformation/Pages/em_biomass.aspx. DNR is also currently studying forest biomass supply. Visit www.dnr.wa.gov/ResearchScience/Topics/OtherConservationInformation/Pages/cc_forestbiomass_assessment.aspx for more information.

Greenhouse Gas Emissions

Under Washington State law, carbon dioxide released from industrial burning of forest biomass is not considered a greenhouse gas as long as the region's forest resources stay the same or increase. If the total amount of forest resources is constant, then the same amount of carbon remains stored in the forests. This is the case even when some areas are logged and the remaining biomass is burned for energy. (See DNR's fact sheet at www.dnr.wa.gov/Publications/em_forest_biomass_and_air_emissions_factsheet_8.pdf.) However, carbon dioxide emissions from burning forest biomass must still be reported under the state's greenhouse gas reporting requirements. (See state law RCW 70.235.020 at http://apps.leg.wa.gov/rcw/default.aspx?cite=70.235.020; and Ecology internet information at www.ecy.wa.gov/programs/air/globalwarm_RegHaze/GreenHouseGasreporting_rule.html)

The Department of Ecology fact sheet about forest biomass in Washington can be found at www.ecy.wa.gov/pubs/1002036.pdf. Contact Justin Brant at Justin.Brant@ecy.wa.gov or (360) 407-7335 for more information about how the state regulates greenhouse gases.

The Olympic Region Clean Air Agency (ORCAA) recently completed a study comparing emissions of various air pollutants, including greenhouse gases, from different uses of forest biomass. That study can be found at www.orcaa.org/woody-biomass-emissions-study/.

Diesel Exhaust / Traffic Impacts / Noise

Mason County has authority over vehicle impacts and noise from the proposed biomass boiler. ADAGE submitted their State Environmental Policy Act (SEPA) checklist for the proposed biomass boiler to Mason County in November 2010. The SEPA checklist included an evaluation of vehicle emissions (Exhibit 12B), traffic impacts (Exhibit 7A), and an acoustics analysis that evaluated noise from idling trucks as well as from boiler operations (Exhibits 8 and 8A). The

documents can be reviewed at www.co.mason.wa.us/community_dev/adage/november_2010/index.php.

Mason County will take these evaluations into consideration when they decide whether an Environmental Impact Statement (EIS) is needed under the State Environmental Policy Act (SEPA). Mason County has the sole authority to decide whether to require an EIS. Mason County will also consider vehicle impacts and noise before deciding whether to issue environmental permits for the boiler.

Mason County will hold a public comment period when the SEPA determination is made. To be notified of the public comment period, contact Barbara Adkins, Mason County Department of Community Development, at Barbara@co.mason.wa.us.

Stormwater Impacts

Ecology and local governments regulate stormwater runoff. The proposed biomass boiler would be required to have a state industrial stormwater general permit if stormwater is going to be discharged from the property or if there is potential for contaminated stormwater to be discharged to the ground. The state permit would require the facility to have a stormwater pollution prevention plan, to monitor stormwater, and to periodically be inspected by Ecology staff. More information on the industrial stormwater general permit can be found at www.ecy.wa.gov/programs/wq/stormwater/industrial/index.html.

Mason County would require stormwater control facilities to be included in the project design. Mason County has adopted the 2005 edition of Ecology's Storm Water Management Manual for Western Washington for county storm water construction requirements. The manual can be found at www.ecy.wa.gov/programs/wq/stormwater/manual.html.

ADAGE submitted information about stormwater treatment facilities in Exhibit 15 and 15A of their November 2010 SEPA checklist. The documents can be reviewed at www.co.mason.wa.us/community_dev/adage/november_2010/index.php. Mason County will evaluate the information as part of the SEPA and environmental permitting processes. Mason County will ensure that the drainage plans for the ADAGE proposal meet the requirements of the stormwater manual.

## VI. Videotaping Public Meeting

One commenter expressed concern that a member of the public videotaped the Ecology public meeting for comment on the Oakland Bay Sediment Investigation Report. This commenter felt that videotaping by a private group should not have been allowed.

**Ecology Response**

When Ecology learned that a citizen planned to videotape the meeting, we contacted the Attorney General's office to find out the legal parameters of allowable videotaping. We were

concerned that having the meeting videotaped could be disruptive or cause people to feel uncomfortable about asking questions. The Attorney General's office informed us that Ecology could not restrict anyone from taping the meeting, but could make sure the videographer was not disruptive. Ecology announced at the meeting that anyone who did not feel comfortable with the videotaping could talk with a staff member after the public part of the meeting or submit their comments in writing.

## Appendix A: Comment Letters

*From form received at Public Meeting:*

John Smith
P. O. Box 1711
Shelton, WA  98584

The risks to the community, our health, and our local economy are too extreme to allow addition pollution (dioxin, heavy metals, etc.) in Mason County.

**From:** Tom Davis [mailto:tom-davis@q.com]
**Sent:** Wednesday, December 22, 2010 6:21 PM
**To:** Mercuri, Joyce (ECY); Bommarito, Meg (ECY)
**Subject:** Thanks for nothing...

Dear Joyce, Len, Meg,

Considering the magnitude of polluted storm-water runoff that will result from both the Adage and Simpson proposed biomass facilities, please forgive me if I do not take your invitation for public input seriously. Indeed, it is reasonable to compare your request to that of considering what brand of aspirin to administer to a soon-to-be victim of a gunshot wound to the head.

It is not my intention to be insolent so please understand that, by virtue of your reluctance/inability/lack of courage/hands are tied/not our job/etc., you and your agencies are rendered irrelevant to our plight.

Much luck in your chosen field(s).

Tom Davis

Resident/Mason County

**From:** Joyce and Dan [mailto:hanndj@gmail.com]
**Sent:** Wednesday, January 05, 2011 1:34 PM
**To:** Mercuri, Joyce (ECY)
**Subject:** Oakland Bay Sediment Report

Dear Ms. Mercuri,

I am a citizen interested in the health of Oakland Bay and all our waterways here in the Pacific Northwest. I have recently studied the issue of salmon habitat degradation; and siltation of our streams has been a considerable factor in that problem. Obviously, your concern, in this study, is the bay and not streams; but what comes down our streams ends up in the bays.

Regardless of how many fish hatcheries we create, the fact remains that loss of spawning habitat (i.e. silted streams with no clean gravel and/or streams with blocked access to returning fish), in conjunction with overfishing, will continue to result in the eventual destruction of that species.

With that in mind I'd like to point out a connection I see between stream degradation and the senseless stripping of our forests for purposes of biomass energy production. When all of the waste wood is scraped from the forest floor, instead of decomposing in place as nature intended, the soil will eventually return to nothing but unfertile rock. There will be no organic material to hold the soil in place. Our abundant rainfall will wash away any remaining nutrients and without plant cover the ground is exposed to erosion and landslides, resulting in silted streams and salmon unable to spawn. You get the picture.

If, as it appears, sediment is the root of salmon (and other species) degradation; as well as the book which holds the historical record of insults we humans have imposed upon our waterways, then I suggest that future archeologists will be pointing their fingers at the people of our time who allowed practices to continue such as those mentioned above and the past practices you now study.

David R. Montgomery has written a serious eye-opener called *King of Fish, The Thousand-Year Run of* Salmon which I feel should be required reading for all bureaucrats dealing with environmental issues in the Pacific Northwest. Have you seen it?

I pray that this issue can be considered in your study.

Thank you.

Joyce Hannum

Union WA

**From:** phil113@comcast.net [mailto:phil113@comcast.net]
**Sent:** Thursday, January 06, 2011 11:28 AM
**To:** Mercuri, Joyce (ECY)
**Subject:** Oakland Bay Dioxin Meetin

Hello,
I was at the meeting you put on in Shelton on Dec 15 about Oakland Bay. I did not fill out the sheet evaluating the meeting but I feel your and your group did an excellent presentation. My only concern was what appeared to be video taping the meeting by a member of the group opposed to Adage. If this is what was going on I feel it should not have been allowed, if possible.

I live on Hammersley Inlet near Oakland Bay and eat shell fish from Oakland Bay. In light of government finances I feel no further action should be taken on the Dioxin issue at this time. If there is any money available ti should be used for addressing issues of failing septic tanks.

Thanks again for putting on the meeting.
Phil Rousseau
1912 Walker Park Road
Shelton, WA

**From:** Connie Simpson [mailto:cgreyhorse@gmail.com]
**Sent:** Tuesday, January 11, 2011 9:09 AM
**To:** Mercuri, Joyce (ECY)
**Subject:** Citizen Comment: Contaminants/Environmental Consequences of Biomass Incineration

Constance Simpson RN (ret.)
81 SE Mill Creek Road
Shelton, WA 98584

Joyce Mercuri
Dept. of Ecology

Jan. 11, 2011

Dear Ms. Mercuri,

Herein follows my submission to your agency of some of the results of my personal study and consultation with experts (Paul Stamets, Fungi Perfecti and others) on the question of the safety of burning biomass for energy production on the waterways and forests of Puget Sound and Western Washington.

Emissions from biomass power plants should be covered by the tailoring rule. Burning biomass for electricity is not "carbon neutral." Burning biomass for electricity (avoidably) releases pollutants into the atmosphere which are detrimental to human health and ecosystems, increasing the likelihood of climate change, and loss of species on land and in our waterways.

I strongly oppose biomass incineration as proposed by Adage and Simpson/Solomon in Mason County Washington, The Evergreen State College in Thurston County, Joint Base Lewis-McCord in Pierce County, as well as the facilities proposed for Forks, Pt. Angeles and Port Townsend. Their stated philosophy that the woody mass should be burned because it is *uselessly decomposing* is an affront to the role of fungi and other organisms building soils within forests. This view is ecologically short-sighted and unsustainable.

The burning of woody mass is a direct insult to the integrity of the forest ecosystems' infrastructure, the health of our community, and local economy.

Of course, saprophytic fungi will lose a resource when the biomass is removed. Many other dependent organisms that thrive in the foodwebs created by the fungal decomposition of woody material will be likewise be jeopardized.

Please consider:

1. The impact on air quality during times of inversion which frequently occur during the rainy season in Shelton. In fact, a look at the ORCAA reports for 2009 reveal fewer than half the days of that year were described as "good". More than half were described as poor or hazardous (to vulnerable populations). When emissions encounter rain, the pollutants are not dispersed over a wide area, but fall within a range, determined by wind or lack of wind, near the source; in the case of Adage and Simpson/Solomon that would be Hood Canal and Oakland Bay. Both already severely compromised bodies of water which have been the focus of years of clean-up work by state agencies and citizens.

2. The amount and impact of dioxin released by the plant on our air quality; the contamination of Puget Sound; and the health risk to people who live, work and play in the areas exposed to the fall-out from the proposed plant.

3. Determination of the type and amount of other pollutants, not currently covered by the SEPA, that the plant will generate including, but not limited to, radioactive cesium and strontium, mercury, arsenic and other known pollutants. The impact that these pollutants will have on air quality, contamination of Puget Sound, Hood Canal, and Oakland Bay, and the health risk to the people who live, work and play in the area exposed to the fall out from the plant.

4. The impact of the diesel exhaust of the (estimated 200+) trucks commuting to the plant to deliver fuel including slash, supplies and chemicals, and the removal of by-products of the plant, including the tons of ash left over as a result of the incineration process, on air quality in the area of the traffic routes. SR 3, which borders Oakland Bay and Hood Canal seems to be a likely major route for these trucks delivering fuel to the Adage plant proposed for John's Prairie Road.

5. Negative impact on topsoils, and humus, increasing erosion and accelerating premature decline of trees. This is not sustainable and reduces carbon sequestration in soils; a devastating practice, if widespread, on fungal and other biological communities. It is an affront that proponents of Adage state the wood debris is uselessly decomposing. These types of statements underscore how poorly the proponents understand ecosystems and sustainability.

Moreover, I think the EPA has made a major miscalculation in viewing biomass incineration as carbon-neutral. CO2 emissions from burning burst into the atmosphere immediately upon combustion whereas slow decomposition occurs over many decades, building humus in the soil. Within this window of decades-decomposition, many life cycles of organisms are supported, *erosion is controlled*, and localized benefits accrue far beyond the simplistic carbon calculations currently used for evaluating biomass incineration.

I believe the forest ecosystems will be severely harmed if biomass is repetitively removed, especially within short periods, such as 30 year cycles.

Hood Canal is already badly compromised and Puget Sound is also suffering from years of pollution from the industries and homes that populate it's banks. We celebrate small gains in shell fish health, water quality, healthy Orcas and salmon, yet these airborne pollutants and emissions (248 tons/year of carbon monoxide, 240 tons/year nitrous oxide, and 338 tons/year of particulate matter - (all per the ADAGE permit filed with the Olympic Regional Clean Air Agency) will negatively affect all the gains of all the hundreds of people who have worked so hard to preserve a national treasure.

The Department of Ecology exists to protect our valuable resources for the future, not just to promote or allow the degradation or gobbling up of resources by short-sighted practices of some citizens today. When humans were ignorant of the effect of their dumping sewage into waterways, clear cutting of forests, strip-mining, and air-borne emissions from factory smokestacks they might say "we didn't know we were hurting the environment--destroying our homes". In 2011 that is not the case. Please defend our environment from further exploitation.

Sincerely Yours,

Constance Simpson

cgreyhorse@gmail.com

**From:** Connie Simpson [mailto:cgreyhorse@gmail.com]
**Sent:** Wednesday, January 12, 2011 10:29 AM
**To:** Mercuri, Joyce (ECY)
**Cc:** O'Garro, Lenford (DOH)
**Subject:** High Dioxin Levels in Oakland Bay

Constance Simpson RN (ret.)
81 SE Mill Creek Rd.
Shelton, WA 98584

Re: dioxin levels in Oakland Bay

Dear Ms. Mercuri and Mr. O'Garro:

I realize the letter I previously sent to you, Ms. Mercuri, was too general and did not specifically address my concerns as a registered nurse, mother and grandmother, regarding the unbelievable statements of our state government regulators that the unusually high levels of dioxin in the sediment of Oakland Bay are acceptable!

I have always believed in the honor and ethics of public service. I believe that most of our public employees go to work everyday, sometimes to jobs with enormous political pressure and confusing mandates, committed to doing the best job they can. I apologize if the tenor of this letter comes across as 'irate'; however, I cannot disguise my incredulity that the levels of dioxin cited could by any stretch of the imagination be considered safe. Further, how is it possible your agency is unaware of, or does not comment on, the biomass to energy plants (seven facilities reportedly in the permitting process) planned for western Washington, most adjacent to waterways?

Dioxin is now present in nearly every corner of the world due to the ignorance and laxity of regulatory bodies, and greed of corporations and industry. Below, I quote the World Health Organization's key points on dioxin: (my underlines and italics)

Dioxins and their effects on human health

*Fact sheet N°225*
*May 2010*

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*Key Facts*

- *Dioxins are a group of chemically-related compounds that are persistent environmental pollutants.*
- *Dioxins are found throughout the world in the environment and they accumulate in the food chain, mainly in the fatty tissue of animals.*
- *More than 90% of human exposure is through food, mainly meat and dairy products, fish and shellfish. Many national authorities have programmes in place to monitor the food supply.*
- *Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer.*
- *Due to the omnipresence of dioxins, all people have background exposure, which is not expected to affect human health. However, due to the highly toxic potential of this class of compounds, efforts need to be undertaken to reduce current background exposure.*
- *Prevention or reduction of human exposure is best done via source-directed measures, i.e. strict control of industrial processes to reduce formation of dioxins as much as possible.*

And, below is a portion of the EPA report on dioxins which, as you can read, are related to the toxic and lethal Agent Orange used in the Viet Nam war, and from which, there were hundreds of thousands of victims-- some who are still suffering today.

**Evaluation of the EPA Reassessment**

*Dioxins and dioxin-like compounds (DLCs) are released into the environment from several sources, including combustion, metal processing, and chemical manufacturing and processing. The most toxic of these compounds is TCDD, often simply called dioxin. Many other types of dioxins, other than TCDD, and DLCs share most, if not all, of the toxic characteristics of TCDD. In the past, occupational exposures to TCDD, other dioxins, and DLCs occurred in a variety of industries, especially those involved in the manufacture of trichlorophenol (used to make certain herbicides) and PCBs. (PCBs contain some forms that are dioxin-like and, when heated to high temperatures, may also be contaminated with dibenzofurans, which are also dioxin-like.) Much of the knowledge about the health effects of TCDD, other dioxins, and DLCs in humans comes from studies of relatively highly exposed workplace populations. Widespread use of certain herbicides containing TCDD, other dioxins, and DLCs, as well as some types of industrial emissions, resulted in local and global contamination of air, soil, and water with trace levels of these compounds. These trace levels built up in the food chain because TCDD, other dioxins, and DLCs do not readily degrade. Instead, they persist in the environment and accumulate in the tissues of animals. The general public is exposed to TCDD, other dioxins, and DLCs primarily by eating such foods as beef, dairy products, pork, fish, and shellfish.*

*The health effects of exposures to relatively high levels of dioxin became widely publicized due to the use of the herbicide called Agent Orange in the Vietnam War. Agent Orange contained small amounts of TCDD as a contaminant. Studies suggest that veterans and workers exposed occupationally to TCDD, other dioxins, and DLCs experience an increased risk of developing a potentially disfiguring skin lesion (called chloracne), liver disease, and possibly cancer. Animal and human studies also demonstrate that TCDD, other dioxins, and DLCs might contribute to*

*thyroid dysfunction, lipid disorders, neurotoxicity, cardiovascular disease, and metabolic disorders.* end of excerpt.

This EPA report does talk about "industrial workers and veterans" having higher exposure levels than the general public, hence, higher consequences to exposure. Despite this caveat, my family and I will not wade in the water of Oakland Bay, we will not buy shellfish from Shelton/Mason County sources, and we will look, with suspicion on your agency as being incompetent in protecting us from needless health risks. The bottom line is: there is no safe level of exposure to dioxin. That is despite the fact that most humans, at least for a time, *survive* exposure.

Because reports such as those I've included are part of your work, you are undoubtedly aware that there are literally thousands such reports that could be cited. Not one of them, of the twenty or so I read, said to knowingly ingest dioxins. Every one of them described serious, sometimes fatal, consequences to dioxin exposure.

It seems your agency does not know about the imminent industrial boom planned for Mason County, near the banks of Oakland Bay. Adage LLC, and (Simpson) Solomon LLC are planning to—conservatively estimated-- triple the current amount of chemical and particulate emissions. How can your department release a statement of safe levels of dioxin when, within a very short time, these levels will exponentially increase? Since your study of Oakland Bay is unlikely to be repeated any time soon, it behooves your department to, at the very least, be cautious in it's endorsement as safe-- shellfish for human consumption and working environments for shellfish harvesters, (the most likely individuals to suffer from maximum exposure to toxins in sediment).

Can you promise us a repeat study in the year after these two mega-watt biomass to power plants begin their (dangerous) contribution to our environment-- and the sediments of Hood Canal, Puget Sound and Oakland Bay? If not, I cannot understand how your report, in good conscience, can be considered a reassurance to the citizens living, eating and playing near these areas.

Please consider further efforts to clean the dioxins from our local waterways, and to prevent future dioxin deposits by industry (or any other source) in our beautiful Washington State waterways, instead of hiding behind unrealistically hopeful health statistics and political spin which allow polluters to continue. I think our state agencies should be more facile, and interested--given our economic dependance on our waterways and their products--than ship-of-state-federal-agencies which are slow to respond to data, in updating regulatory information. Rather, it seems, state agencies often abandon common sense and point to out-dated regulatory levels-- which will most likely catch up, but, at what cost to human and environmental health?

Thank you for your attention to this important topic.

Yours Truly,

Constance Simpson

**From:** jomomi [mailto:jomomi@yahoo.com]
**Sent:** Thursday, January 13, 2011 10:21 PM
**To:** Mercuri, Joyce (ECY)
**Subject:** Mason County's Pollution

Hello Ms. Mercuri:

We spoke at the recent DOE/DOH presentation on the pollution in Oakland Bay.

At the presentation it was reported that Oakland Bay has serious pollution, but the actual source of that pollution hasn't been firmly identified. However, we KNOW that burning wood creates dioxins, and there have been wood-burning businesses on the waterfront. There are also existing businesses that are burning wood on our waterfront, continuing to pollute the air and water. Simpson/Solomon is requesting permits to build a co-generating biomass plant on the waterfront. Does it make sense to allow another smokestack on our already dangerously polluted bay, to spew additional pollution? What about when you factor in the dioxins coming out of the proposed biomass Adage plant? Is there someone at DOE who will draw the logical conclusion that our bay is sick because of the burning of wood?

It makes NO sense to spend money on the cleanup of the bay when the same polluting activities are allowed to continue, and increase. Please help us to defeat the proposed biomass plants so the cleanup efforts can be successful. You can let ORCAA know that the air from the smokestacks is not conducive to the cleanup of our environment, and request that they consider that in their decision to permit the plants. There is NO safe level of dioxins, and it is especially disconcerting that dioxins will not even be measured or regulated. At the very least, an Environmental Impact Statement should be required, and this is something you could advise our county commissioners and the Mason County Community Development to insist upon. As a State regulating agency that is aware of the dangers of dioxins, your advice would carry more weight than the request of just a citizen.

Please acknowledge receipt of this letter.

Thank you for your help in this matter,

Deborah Soper

Shelton, WA

**From:** Pat Jerrells [mailto:trisha7of9@hotmail.com]
**Sent:** Friday, January 14, 2011 8:27 PM
**To:** Mercuri, Joyce (ECY)
**Cc:** lenford.o'garroe@doh.wa.gov
**Subject:** Dioxin Levels in Oakland Bay

Dear Joyce Mercuri,

I am just a regular person, a grandmother, a mother, a wife. I have no special credentials. But I do know a bit about Dioxins and relative toxins. They are likely the most insidious, prevalent toxins ever made by man. There does not seem to be any place in the world that they cannot be found. As horrifying as it sounds, there is more Dioxin in human breast milk than the EPA allows in cows milk for human consumption. The bottom line is there is no safe level of Dioxin.

There are people suffering from exposure in industry and from the Viet Nam War. My husband was in the Navy during this time and luckily was not exposed. However he did work with PCB's in his job at the PUD when changing out the oil in the transformers. My son and daughter and I were sprayed by a helicopter that was working over logged Simpson land preparing for replanting. We lived on the creek across from their land and the person who was supposed to tell us to leave that day, forgot. We have a condition that I believe to be called Chloracne. I have it on my face (the area that got sprayed) and my kids have it on their feet, my son's going up to his groin at times. Stress acerbates it. Luckily, it is not to the degree that the vets suffer. Since Dioxins are cumulative and they do not degrade easily, you can see why we want no more exposure. There are many terrible side effects for humans and animals. You can find pictures of birth defects, and much information in scientific journals, papers and studies. I believe you would have studied these before making any decision on Oakland Bay?

Oakland Bay is a "hot spot" of Dioxin. It is about to become much hotter because of the large amounts of pollution including Dioxins that will be put out by Simpson/Solomon LLC and Adage LLC, after they are up and running. These industries will be added to Olympic Panel and the existing Simpson Incinerator, sending pollution out over the town of Shelton and also out over Oakland Bay. The prevailing winds will carry the toxins up towards Kitsap County over large amounts of water. Many of us who live here cannot believe this is being allowed. Somehow, the agencies charged with protecting the populations, are looking at each project separately, instead of looking at the cumulative effect. This makes no sense.

We have never eaten anything out of Oakland Bay as we knew this was a polluted area when we moved here in 1969. We did not know about the Dioxins then. However, Simpson was known for their pollution and the hospital for treating a lot of respiratory illnesses for the size of the town. We came because the rest of the county was beautiful, we had family here, and we did not

live in town. In hind sight, we should have bought a place farther out, in the other direction as we are slightly downwind of Simpson and will be of the new industries. The cumulative amounts may reach us.

Because of these industries being built here, I am encouraging my children to send their children to Olympia to school when they get to middle school age. Most of our schools, Olympic College, Elder homes, the Hospital and many residences are by the area where Adage will be built. I will no longer shop or eat in Shelton when these plants are built. The air is often foul now, as it is common to have air inversions here, especially in the winter, so I can imagine how it will be then. Luckily we have a 30 minute drive to Olympia. Not everyone is this fortunate. I do not mean to get off the subject of Dioxins but all of these pollutants are connected in my mind as they will be coming from the same plants. They are all horrible and they are all killers, in their own way. If people could afford it many of us would be leaving the area, but some home sales have fallen through because of Adage.

I hope you will reassess your findings on Oakland Bay and the safely of Dioxins.

Thank You,
Patricia Jerrells
320 SE Nighthawk Place
Shelton, Washington 98584

**From:** CBenningto@aol.com [mailto:CBenningto@aol.com]
**Sent:** Saturday, January 15, 2011 3:52 PM
**To:** Mercuri, Joyce (ECY)
**Subject:** Comments regarding ADAGE in Mason County Wa.

1-15-2011

TO: Joyce Mercuri, Ecology Project Manager

Department of Ecology, State of Washington

**Dear** Ms Mercuri ;

I wish to respectfully submit a written comment on the **ADAGE Bio-power incinerators proposed for construction and operation in Mason County.**

**My comments are as follows:**

**I am against allowing these incinerators to operate in Mason County!**

**The ADAGE company is masquerading as a potential boon to the economy, when it is actually a threat to the ecology of Mason County. Having read the ADAGE propaganda material on their website I feel it is full of misrepresentations of the facts and out right lies.** I am not a scientist or an expert on environmental issues, but I have enough education and experience to see the bogus aspect of a presentation. I am amazed that c**ommon sense has not prevailed in the assessment of this entity as a way to generate electricity from logging slash. The advocates of these Incinerators are in my opinion motivated by money making at the expense of our beautiful environment.**

**The time, place and methods aspects of their biomass carbon cycle are the flaws in their proposal for generating electricity from logging slash/ biomass/ wood waste.**

**Time and Place:**

**They say on this burning bio-mass (logging slash) website that the pollution (which they don't call pollution and instead call burning biomass which releases carbon dioxide) would be released naturally due to forest fires and decay.** I question what else is released into the atmosphere via this burning of biomass. What about the release into the atmosphere of toxic dioxins?

**Doesn't the decaying Logging slash/Biomass/wood waste matter provide necessary nutrients to the forest for its renewal?**

**Unless man made or caused, forest fires are a natural occurring phenomenon. Forest fires are not burning 24/7 and 365 days of the year. ADAGE is going to burn how many tons of**

**biomass/ logging slash a year?** What else are they going to burn when they run out of logging slash/ biomass /wood waste? **The time it takes to replace the forest/ biomass is how many hundreds of years? If the Incinerator pollution is supposed to be reabsorbed by growing plants and trees, then why are the incinerators located in a human populated area? The humans in the area and not the growing plants and trees are the ones who will be absorbing the pollution.**

**The place the wood waste is burned in incinerators is in populated areas. It pollutes the air near populated areas through a process that is human made. It is not a natural process, which is out in the forest and dispersed through a longer time span into the atmosphere and away from human populated areas.**

**Note: Why are there EPA edicts on burn bans at various times of the year in the state of Washington? Doesn't it relate to EPA monitored air pollution in the area? When the EPA announces a burn ban, will ADAGE shut down?**

**The following is an excerpt from a Pro-ADAGE website:**

**"In contrast, burning biomass releases carbon dioxide that would have been released anyway through decay or wildfire, and is therefore part of the natural carbon cycle. The carbon dioxide released when the wood waste is burned is replaced when forests are replanted and is reabsorbed by growing plants and trees, so there is no net atmospheric carbon dioxide as long as the carbon cycle is in balance. Thus energy produced from biomass is carbon neutral as long as the region practices sustainable forestry."**

http://www.wfpa.org/pages/biomasspolicy.html?gclid=CPXOp-HU_aQCFQUSbAodwEYfhg

**Methods:**

**The fossil fuels utilized to collect and transport the logging slash/ biomass/ wood waste to the incinerators is in itself inefficient and should have eliminated the concept as not being ecologically friendly and compatible. John Deere has a website that touts its' fossil fuel burning vehicles that collect logging slash/ biomass/ wood waste from the forest floor. They of course have a vested interest in selling their products.**

**How much of a carbon footprint will these vehicles leave?**

**Even ADAGE admits that the incinerator "technology is old." So too is the internal combustion engine that we are trying to replace with other power sources and modes of transportation that don't pollute the environment. Why in the world are we using an incinerator to create electricity? Aren't there more efficient and cleaner methods of creating electricity?**

**Propaganda and misrepresentation:**

**Tactics like using obscure terminology to baffle citizens as part of their propaganda is misrepresentation. For example, the use of terminology like biogenic and non-biogenic to describe carbon emissions, which are pollution, into the atmosphere to try to make it sound like one form is less polluting and preferred over the other.**

**Promises of creating jobs:**

Vague promises by ADAGE of creating jobs in Mason County. The 24 people it will take to run the incinerator once built is hardly a boon to Mason County. The other numbers of people working in service jobs (75 jobs according to the ADAGE mailing) and the over 100 jobs providing biomass to the plant are hardly a boon to Mason County if indeed they are accurate figures. How many people are unemployed in Mason County? What is the population of Mason County?

**Are we willing to trade jobs for pollution?**

**Conclusion:**

**ADAGE planned incinerators are going to cause horrific damage to the Mason County environment by the following:**

1--- Health problems due to the pollution they release into the air, water and noise pollution. Respiratory diseases such as asthma, lung cancer, COPD, emphysema, and deafness are but some of the possibilities.

2--- Increased fossil fuel usage will pollute the air, water and create noise pollution both from the incinerator and from 100 or more per day large trucks that deliver the biomass/ wood waste to the incinerator plant.

3--- The presence of the Incinerators will drive down property values which in turn effect property taxes collected.

Instead of add to the economy it will drive people away from living here in this relatively pristine area.

**Note:**

The Simpson Timber Company/ Green Diamond is already a vestige from the past that spoils and pollutes the scene as you enter Shelton. Why in the world would we want to contribute to that scar on the landscape of Mason County?

Respectfully Submitted;

Claude Bennington

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**From:** Fran Prescott [mailto:evergreen@franprescott.com]
**Sent:** Friday, January 21, 2011 8:24 PM
**To:** Mercuri, Joyce (ECY)
**Subject:** Dioxins in Oakland Bay

Oakland Bay is under threat of additional dioxin pollution as well as acid rain and a whole host of other chemicals from the proposed ADAGE plant. The plume, for most of the time in the rainy season, will be moving across the Bay. The rain will pass through the entire depth of the plume and the rain will carry the pollutants into the waters and exposed mud flats of Oakland Bay.

I hope that you will pass this concern to the appropriate departments in Ecology. Cleaning up old pollution while piling on new pollution is not how we will end up with a clean bay and viable shellfish industry in Oakland Bay,

Thank you

Frances Prescott

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