

**GILBERT AND ROBERTSON ELEMENTARY SCHOOLS, YAKIMA
AND
NACHES INTERMEDIATE SCHOOL, NACHES**

INTERIM REMEDIAL ACTION AND SEPA DETERMINATION OF NON-SIGNIFICANCE

RESPONSIVENESS SUMMARY

**FOR COMMENTS RECEIVED
COMMENT PERIOD ENDING JULY 28, 2006**

On June 28, 2006, the State of Washington, Department of Ecology (Ecology) issued two fact sheets about three schools in Yakima County. One fact sheet was issued for the Gilbert and Robertson Elementary Schools in Yakima, and one fact sheet was issued for Naches Intermediate School in Naches. Both fact sheets were titled "Interim Remedial Action and SEPA Determination of Non-Significance." The fact sheets outline Ecology's proposed remedial actions at the three schools, including excavation and/or mixing of contaminated soils. Pursuant to Washington Administrative Code 173-340-600, the proposed remedial actions were subject to public comment from June 28 to July 28, 2006.

Ecology received comments or contact from:

Tom Coleman	Steve McKenna
Larry Conan	Suzanne Obermeyer
Walter Dauber	Mike Osborn
Mr. & Mrs. DeBord	Ms. Payne
Bob Diener	Doug Rich
Leonard Flathers	Buzz Rowe
Robin Gangle	Jay Russell
Bill Gilmore	Troy Smith
Olan & Joan Laughery	Joyce Stephens
Caren McElrea	Six (6) anonymous individuals

This Responsiveness Summary sets forth Ecology's responses to the comments received regarding the proposed remedial actions for the schools. The comments received are grouped by subject and are followed by Ecology's responses in **bold**.

Comments about lead and arsenic effects on health:

"Does the potential exist for soil borne contamination to cause illness in humans?"

"Lead and arsenic are natural chemicals."

"Lead and arsenic is only a concern if it's sprayed on you."

"I lived less than a block away from Robertson Elementary, and a couple years ago I was found to have lead and arsenic in my system. Upon contacting the county, I was told there was not a source of lead and arsenic in the area."

"Can there be a policy proposed to have children wash their hands after every outdoor recess?"

Arsenic is a naturally occurring element and is widely distributed in the environment. All humans are exposed to low levels of this element. The scientific community refers to these low levels as “background.” Background arsenic levels for the state of Washington are 5 parts per million (ppm) in soil. The soil at the three Yakima Valley schools is considerably higher than background levels and above state cleanup standards as well. This is a concern to Ecology since arsenic is a known carcinogen and poison and long-term exposure over time can cause serious health effects. Arsenic exposure can come from a variety of sources, including soil. For those who are concerned about specific health information, Ecology refers you to the Washington State Department of Health (DOH). They are the agency that has expertise in health and toxicology. For your reference, attached is an “Arsenic in the Environment” fact sheet from the DOH. For those with computer access, Ecology recommends the King County Public Health website as another excellent source of arsenic information - <http://www.metrokc.gov/health/tsp/arsenic.htm>.

Lead, like arsenic, is naturally occurring and can be found throughout our environment. It has not been proven to be a carcinogen. However, lead has many adverse health effects; because of this, its use in gasoline, paints, ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

Again, DOH is the expert on health and toxicology, so attached to this summary is DOH’s fact sheet on lead poisoning. The King County Public Health website also provides relevant information on lead and lead poisoning in plain and understandable language - <http://www.metrokc.gov/health/tsp/lead.htm>.

All available health information notes that children are more vulnerable and susceptible to both lead and arsenic contamination than adults. This is why Ecology is focusing its efforts on elementary schools.

Because of the widely documented serious health effects from lead and arsenic, Ecology considers these “hazardous substances” and has established cleanup levels. The contamination levels found at all three schools are above the statewide risk based cleanup levels.

Ecology encourages anyone who is concerned about these effects to contact their physician. Blood tests are available to determine lead levels, and urine tests are the most accurate for arsenic.

Ecology, along with the DOH, also encourages frequent hand-washing in homes and schools to decrease the likelihood of ingestion.

“How many children have gotten sick from these contaminants?”

“Please provide documented evidence of where a current or former student... has experienced lead/arsenic-based illness from contact with this soil.”

“...No documented evidence... shows harm to children and adults over the last 100 plus years.”

“Has anyone suffered health effects from this site or similar sites?”

“Unless there is a documented incident of lead or arsenic poisoning..., it would be needless to undertake the very extensive and costly cleanup action proposed.”

“No children in the Naches School District or any other school district in the Yakima Valley have ever exhibited symptoms of lead and/or arsenic poisoning.”

These comments go to the heart of whether Ecology has set cleanup standards at the appropriate level, or whether numerical cleanup standards should even exist at all. They imply or specifically state that the burden of proof be upon Ecology to prove that a given site has caused health damage before it takes action to clean up a site.

Instead, Ecology and many other agencies rely on documented toxicological research that can be used at many sites. And while individuals are free to propose that proven health damage be required before taking a cleanup action and to advocate that laws and regulations be changed to reflect their view, this view is not the current standard.

Ecology will readily acknowledge that experts differ on what cleanup levels should be, but believes the state established standards reflect a preponderance of expert scientific opinion.

In addition, moving to a standard of proven health damage would be difficult to implement. Individual health records and medical information are confidential, and this would put Ecology in a position of violating confidentiality.

If individuals would like information on health effects in specific Washington populations or areas, that information would likely reside with the State Department of Health, one of our partners in these cleanup activities.

For those interested, there are numerous studies that show a direct correlation between lead in soil and lead in children’s blood. One of the best is in the Silver Valley of Idaho, where lead deposition from an old smelter contaminated the soil and children in the area still have elevated lead blood levels even though cleanup efforts have been ongoing for several years now.

Essentially, because of the adverse health effects documented previously, Ecology prefers to be proactive in its endeavors. If we know lead and arsenic are harmful and exist in levels in excess of state cleanup standards, then we will do whatever necessary to reduce or eliminate that risk. That is the fundamental purpose of our agency, to protect human health and the environment, and is also the foundation for the citizen-mandated law known as the Model Toxics Control Act (MTCA), which states, “Each person has a fundamental and inalienable right to a healthful environment, and each person has a responsibility to enhance and preserve that right.” (70.105D.010 Revised Code of Washington)

Ecology believes the voters of the State of Washington considered it better to be proactive and reduce risks to children up front by cleaning up releases of hazardous materials rather than treat illnesses after they occur. This cleanup effort for schools is also part of the Governor's "Healthy Washington" initiative.

"How much dirt would someone have to eat to cause a problem?"

"Each child would have to eat a dump-truck load of this so-called dangerous soil to even be slightly in danger."

Although there is considerable variation among different individuals, human studies indicate symptoms of arsenic toxicity occur when as little as 20 micrograms per day is ingested.

Because of this, Ecology strives to reduce everyone's exposure to arsenic as much as possible. And while there may be symptom variability, there is no doubt that reducing or eliminating exposure can only help human health and the environment.

"What is the quantified risk from this site?"

As described above, Ecology has not quantified the risk for each site, but has used risk quantification in the setting of cleanup levels for given hazardous substances such as lead and arsenic.

"If Naches is ranked a 5, what are the other two schools ranked?"

All three schools have been ranked through the Washington Ranking Method, which takes into account various pathways of exposure and compares sites throughout the state against each other. All sites on Washington's Hazardous Sites List have been similarly ranked. A ranking of 1 represents the highest environmental threat and gives Ecology an idea of how to prioritize resources. Gilbert and Robertson are ranked a 3, while Naches is ranked a 5.

What is the contamination level in the grass itself and does that protect people from contact with this contamination?"

"How do lead and arsenic under grass cause problems?"

"The Naches Soccer Field and Intermediate School playfields are already planted in grass and children are not allowed to dig in the soil."

"The children...do not eat the soil... - the grass forms a secure barrier layer from the dirt."

"In the forty years in which I have continually driven by the Gilbert School on a daily basis, I have failed to see any of the students eating the dirt or grass..."

Ecology does not believe grass is an adequate barrier to protect children from lead and arsenic exposure. Even though most schools have established lawns, our testing shows that there are still

concentrations of lead and arsenic at the surface that exceed the state cleanup levels. In areas of high child use, the lawns get very worn and thin by the end of the school year exposing the underlying soil. Each year the lawns are aerated by plugging that brings soil to the surface so there is additional exposure. A child does not have to eat the lawn or dirt to become exposed. Just licking fingers or their hands will expose children through ingestion.

In addition, Robertson Elementary has a bare dirt marble pit where children often play during recess, increasing their likelihood of encountering contaminated soil. In conversations with teachers and parents, Ecology is also aware that children are not required to wash their hands after recess or before lunch.

Despite the anecdotal observation in one comment regarding the absence of eating grass or dirt by Gilbert students, Ecology believes it is generally accepted that children do put their fingers in their mouths.

“Fruit grown in orchards that contain “contaminated soil” is allowed to be sold to the general public.”

The safety of our food supply is a very important issue but agencies other than Ecology have the regulatory responsibility for this issue. Ecology does not concur with the implication that the absence of contamination in fruit would be evidence that the soil is not contaminated. Researchers at Washington State University have shown that fruit trees grown on lead and arsenic contaminated land do not uptake and pass either lead or arsenic to the fruit. For more information on this, please contact the WSU Cooperative Extension in Yakima.

Comments about dust and dust control:

“Will work generate contaminated dust?”

“Whose responsibility is it to control dust?”

“What are your plans for keeping the dust settled?”

Ecology’s experience has shown that neighbors’ number one concern about any environmental remediation project is dust control. Therefore, Ecology ensures that all contractors and subcontractors have a dust control plan. The contractor will use a water truck and sprinklers to control dust. Ecology staff will monitor the work to make sure the contractor complies with their responsibility. We will note that Ecology did not receive complaints regarding dust emissions from the four schools in Wenatchee we worked at earlier this summer.

“Disturbing the soil in this significant manner could put hundreds of neighbors – including children and pregnant women – and other citizens who drive through this area daily at high risk of

inhaling and/or ingesting the very materials you feel are so dangerous that they require removal from the school grounds.”

“Will digging up and stirring in new soil create a larger problem in generating contaminated, airborne dust?”

Ecology firmly believes we will not create additional contamination by cleaning up the soil. As we have stated above, dust control is a concern for us and we will make sure the situation is monitored.

Comments about soil testing:

“Should I test my soil?”

“Are there other things neighbors can do to reduce risk?”

Soil testing is optional. Old aerial photographs are available from several sources (Ecology, Yakima County Health District) that may indicate if a property was located on old orchard land. Individuals are free to test their soil if they are interested in the results. Many laboratories in the area will be able to accommodate you. Ecology encourages calling the laboratory ahead of time to request sampling containers and proper sampling procedures. Sampling is relatively inexpensive, approximately \$30 per sample.

Lead and arsenic do not decompose, biodegrade or move downward through soils and will remain permanently in the top layers of soil unless it is removed. Therefore, if you suspect your soils are contaminated you should take the following exposure reduction measures:

- **Keep children from playing in contaminated dirt. The most likely way to become exposed to lead is from ingesting (eating) dirt; toddlers and young children tend to play in dirt and then put their hands/toys/other items in their mouths.**
- **Frequently wash toys, pacifiers, and other items that go into children's mouths.**
- **Cover bare soils with grass or other material.**
- **Wash hands and face thoroughly after working or playing in the soil, especially before eating. Do not eat, chew, or smoke in areas with contaminated soil.**
- **Wash garden vegetables and fruits carefully to remove all soil particles. Take care to get dirt out of the crevices of vegetables such as broccoli.**
- **Remove work and play shoes before entering the house.**
- **Wash soil-laden clothes separately from other clothes.**
- **Damp-mop floors and wipe down counters, tables and window ledges regularly. Do not use a vacuum as a method to keep contaminated dust under control. Vacuum cleaners DO NOT reduce dust and tend to stir it up into your breathing zone. If you prefer to use a vacuum cleaner, use one with a HEPA (high efficiency particulate air) filter.**
- **Prevent pets from tracking contaminated soils into your home. Keep them out of areas with exposed dirt.**

- **Consider wearing a mask if you spend time in dusty environments.**
- **Make sure you and your children eat a balanced diet with adequate amounts of iron and calcium. Iron and calcium help to prevent lead from becoming a problem in the body.**

“How far down did you have to dig to find the contaminated soil?”

Ecology’s first samples were from the top 6” of soil. Subsequent soil sampling extended to as much as 4’ below grade to determine the vertical profile of contamination. Our sampling has indicated lead and arsenic contamination rarely extends past 2’ below grade.

Comments about other areas and test results:

A neighbor to Robertson Elementary School inquired about monitoring data for the pear orchard located immediately north of the school.

A commenter wondered if testing of soil at children’s homes was better or worse than the school grounds. Future mandatory soil testing when buying/selling?

A commenter also inquired about the testing results for other schools in the area (e.g., Eisenhower, Franklin, Washington). Were they better or worse than Gilbert and Robertson?

Ecology has testing results for other schools in the area but not any other properties. Results are available for public viewing by appointment only. Please call Ecology’s resource contact, Roger Johnson, at (509) 454-7658, if interested.

Comments about timing of project:

“When would work start?”

“When would work be completed?”

“How long will it take to complete this project?”

“When will this take place during the year? Hopefully NOT while children are attending school.”

“The project should not be done while children are in school.”

Ecology strongly concurs that this project should not take place while children are in school. Work will begin the week of Monday, July 31, 2006. Cleanup will be completed prior to school starting.

“Why is this being done now since the lead and arsenic have been there a long time?”

“The presence of lead and arsenic in the soil throughout Yakima County is a well known situation of many, many years duration.”

Ecology will readily concur that the use of lead arsenate was a widely accepted practice and widely known throughout the community. However, since 1995, Ecology was directed to take steps to more effectively address the particular type of contamination caused by application of lead arsenate. Since this contamination is often dispersed over a large geographic area, traditional soil cleanup approaches may not always work best. A task force of state agencies was formed, and in 2003, the Area-Wide Soil Contamination Task Force presented its findings and recommendations. One of the primary recommendations was to minimize exposure to children. Following that, Ecology has been working with schools throughout central Washington to test their soil. This testing was provided free of charge. At this point, Ecology has tested over 100 schools and roughly 30% have contamination exceeding state cleanup standards. Now that Ecology is aware of what schools are at-risk, we have phased into implementation of cleanup activities.

Comments about cost of the project and funding for the project:

“The cost of the project just at Naches Intermediate School is over \$500,000 to the taxpayers of Washington State.”

“How much will this cost the taxpayers to do this project?”

“Please provide an accounting of the expense to date for the NVIS testing, publication and mailing of this document, and any estimate of the expense for your proposed replacement plan.”

“There are better things on which to spend our money.”

“I need to receive the cost of the soil clean-ups at the two elementary schools.”

Any agency would be wise to listen carefully when taxpayers believe there are better ways to spend their money. In the big picture, Ecology believes there is little better that a society can do with its money than protect the health of its schoolchildren. However, even on a more practical level, this money has been collected and appropriated for this purpose. The money for these cleanups comes from the State Toxics Control Account, a fund dedicated to cleanup activities established by a 1989 initiative voted on by the citizens of Washington. The account is funded through a tax on the wholesale value of hazardous substances. The state legislature has allocated Ecology funds for these cleanups. The funds are restricted to pay for cleanup of hazardous materials. So unfortunately, it cannot be used for other purposes (e.g., hire more policemen, increase teacher salaries, reduce our taxes, etc.). Therefore, if the money were not spent for this project, it would be used for other cleanups around the state.

Our most recent estimates for these three cleanups were Naches Valley Intermediate School \$ 555,000, Gilbert Elementary School \$385,000, Robertson Elementary School \$305,000. These are estimates only and subject to change based on changing site conditions.

Comments about bids being released prior to the end of the comment period:

“Have we already decided what we’re going to do?”

“It looks like Ecology has already made up its mind what it’s going to do.”

“Are you taking bids on those two grade school projects?”

“I also note that the comment period will run until July 28, 2006. It is my understanding that bids have already been let for the clean-up and the bids are to be opened prior to July 28, 2006. Is this true?”

It is the nature of the process spelled out in law and regulation that Ecology comes up with a plan and then provides that information in a timely manner to community members who may be affected or interested. The nature of the public comment period is to ensure that significant public concerns are addressed. While it does not mean Ecology has made up its mind, it does mean that we have evaluated various options and identified the one we believe is most practical and feasible.

Bids were solicited and received during the comment period. Ecology did this to retain the option of completing cleanups prior to school starting. A contract was not awarded during the comment period, although it is likely to be awarded July 31, 2006, or shortly thereafter.

Comments about feasibility of interim action:

“It would make much more sense and be much less invasive to cover the grass that is already there with several thin layers of soil and allow the grass to grow through, building up the amount of soil between the contamination and the areas where children play. This experimental deep mixing project, which is not a sure fix and may lead to making the situation worse...”

“Why don’t we just cover the whole site with a new layer of soil....?”

“From experience in construction, it would be better and less expensive... to simply cap the contaminated soils using a synthetic fabric and clean soil...”

“...Why don’t you lay 1 – 2” of sand over the entire grounds? It will work through the sod and create a barrier.”

“...The playgrounds have been watered continually and most of the lead and arsenic has been leached downward away from the top soil. In addition, this soil received approximately three-quarters of an inch of Mt. St. Helen’s ash approximately twenty years ago and on top of the soil there is an excellent lawn.”

“...A much more effective and appropriate way to protect everyone..... is to ensure the grounds stay covered, with grass or other materials, and simply disallow any type of activity on the grounds which is likely to cause the ground to be significantly disrupted.”

These comments all suggest that capping the soil in some way to provide a barrier will be a more feasible and less expensive option. As stated in our plan documents for these schools, capping is a feasible alternative that would cost less than physical removal, possibly considerably less

depending on the characteristics of the cap. However, capping is not as permanent a solution as removal because caps erode or weather and require specific maintenance. In Ecology's experience, this alternative does not stand up well over time, as onsite digging and new construction will allow the contaminants to surface. Most of the school districts Ecology talked to did not have the time, resources, or personnel to continually maintain a cap and preferred a more permanent solution. Therefore, excavation of higher contaminants along with deep soil mixing of low-to-moderate contaminants appeared to be the better choice than a simple cover. Throughout this project, Ecology is interested in solutions that are both protective and permanent. While capping is less expensive, it is also less permanent and protective than mixing and excavation.

“Your testing shows the lowest possible level of contaminant and calls for the highest possible response. This response is unnecessary.....”

This response is appropriate and complies with the cleanup regulation.

“What about tree clean-up?”

Trees do not appear to be a problem or contaminant pathway.

“Why didn't we try to water the contaminants in to dilute the concentrations?”

Although arsenic is somewhat more mobile in soil than lead, both are metals and water does not dilute the concentrations.

“Are you going to create more exposure by removing the sod and the topsoil versus not disturbing the topsoil?”

There will be more exposure for a short period of time. Ultimately, though, risk through exposure will be less after mixing and removal.

“What is meant by an ‘interim action?’ Will additional remedial action be required in the future?”

An interim action is a remedial action or cleanup taken to reduce the threat of exposure to a contaminant. Interim actions may be permanent actions where no further actions are necessary.

“Is this a cure or is this an experiment?... Is this a test site?”

Ecology's cleanup response is intended to be a permanent solution.

“Will Naches receive all new turf, or part turf and part seed, and if so, why?”

The grounds at Naches Intermediate School will be returned to their original condition.

Other miscellaneous comments:

“Supportive of project, get it done.”

“This is a government solution to a problem that does not exist.”

“The next thing we will most likely hear is a government mandate to do the same to all residential and commercial properties where orchards once were.”

“...The entire area surrounding the schools, if not a significant portion of ... west Yakima.... Is highly likely to contain these very same contaminants.”

“There is lead and arsenic in the soil in the entire Yakima previous orchard area which is most of the upper Yakima area.”

A neighbor to the Naches Intermediate School wanted Ecology to know about his domestic water line, which was located on both his and the school’s property.

In closing, Ecology sincerely appreciates comments from the community.