



**INTERIM REMEDIAL ACTION PLAN
PESHASTIN DRYDEN ELEMENTARY SCHOOL, PESHASTIN, WA
LEE ELEMENTARY EAST WENATCHEE, WA**

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**Prepared by Washington State Department of Ecology
Toxics Cleanup Program
Jeff Newschwander (509) 454-7842**

1.0 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

The purpose of this Interim Remedial Action Plan is to fulfill the requirements of Washington Administrative Code (WAC) 173-340-430, which include a requirement that, except in certain circumstances, a report be prepared before conducting an interim action under the Model Toxics Control Act.

1.2 SUMMARY OF PROPOSED INTERIM ACTION

At Peshastin/Dryden Elementary School, the Department of Ecology (Ecology) proposes to place a geotextile liner and eight inches of clean soil on top of the existing soil and grass, establish new grass in this clean soil, and create institutional controls for the site. The plan includes raising the existing irrigation system (underground solid set sprinklers) to the new soil level to maintain the turf cover at each school.

At Lee Elementary School, the Ecology proposes to cap approximately 20,000 square feet with an asphalt parking lot. The plan includes abandoning the sprinkler system in the proposed parking area, leveling the site, placing sub-grade material, placing an asphalt cap, and creating institutional controls for the site.

2.0 BACKGROUND

2.1 AREA-WIDE SOIL CONTAMINATION TASK FORCE

In response to increasing public concerns on lead/arsenic contamination, the 2001 Washington State Legislature requested that Ecology prepare a statewide strategy to address lead and arsenic soil contamination. The project's main focus was on areas with low to moderate levels of lead and arsenic that have been developed into residential neighborhoods, schools, daycares and parks.

Ecology's strategy includes the findings and recommendations of the Area-Wide Soil Contamination Task Force, a 17-person panel chartered by the Washington State Departments of Agriculture, Ecology, Health, and Community, Trade and Economic Development (the Agencies) to offer advice about a statewide strategy to respond to low- to moderate-level arsenic and lead soil contamination in Washington State. The completed report, **Area-Wide Soil Contamination Task Force Report**, Ross & Associates Environmental Consulting, Ltd., Landau Associates, Inc., Hubbard Gray Consulting, Inc, was published June 30, 2003.

Task Force deliberations focused on understanding the nature and extent of area-wide soil contamination, making recommendations about effective, practical, and affordable steps individuals and organizations can take to reduce their potential for exposure to area-wide soil contamination, and on creating an alternate, more streamlined approach under MTCA for properties affected by area-wide soil contamination.

Specifically, the Task Force recommendations and Ecology's implementation strategy for schools affected by area-wide soil contamination include the following:

- implement individual protection measures
- maintain good soil cover in areas where children play
- conduct qualitative evaluations to increase their understanding of where exposure could occur
- test soils where qualitative evaluations indicate the potential for exposure to contaminated soil, and
- implement additional protection measures such as installing a geotextile fabric barrier between contaminated soils and surfacing materials in play areas if contamination is found.

Ecology has assembled a toolbox of information and materials designed to answer questions about area-wide soil contamination at the following web site:

http://www.ecy.wa.gov/programs/tcp/area_wide/area_wide_hp.html

2.2 CONTAMINANTS OF CONCERN

The main contaminants of concern at these sites are the toxic metals, lead and arsenic. Long-term exposure to elevated levels of arsenic may cause cancer, whereas, long-term exposure to lead may affect and impair the human nervous system and proper brain function. More information on the effects of lead and arsenic can be found at the following chapter within the same Ecology project web site cited above:

http://www.ecy.wa.gov/programs/tcp/area_wide/AW/toolbox_chap4.html

2.3 AREA SOIL TESTING AND INITIAL INTERIM ACTIONS

Between 2001 and 2005, Ecology assisted school districts in conducting soil sampling for lead and arsenic contamination at school sites. A total of 35 schools located in Okanogan, Douglas, Chelan, and Yakima Counties had soil contamination significantly higher than Washington State cleanup standards.

During summer 2002, Ecology began taking interim cleanup actions. Ecology provided funding to pay for cleanup projects, initially in conjunction with already-planned remodeling projects. In 2006, six schools were remediated with a combination of deep mixing and disposal of contaminated soil where it was found that optimum concentrations of lead and arsenic in soils for effective deep mixing are below 40 parts per million (ppm) arsenic and 500 ppm lead.

2.4 PESHASTIN DRYDEN ELEMENTARY SCHOOL SITE ASSESSMENT

Of 115 soil samples taken from the property at Peshastin Dryden Elementary School in 2005 and 2007, 43 samples exceeded the state Method A cleanup level for arsenic or lead or for both. The

highest level of arsenic detected at the site was 92 ppm, compared to the state cleanup standard of 20 ppm for arsenic. For lead, the highest level detected was 422 ppm, compared to the state cleanup standard of 250 ppm.

2.5 LEE ELEMENTARY SCHOOL SITE ASSESSMENT

Of 199 soil samples taken from the property at Lee Elementary School in 2005 and 2007, 56 samples exceeded the state Method A cleanup level for arsenic or lead or for both. The highest level of arsenic detected at the site was 434 ppm, compared to the state cleanup standard of 20 ppm for arsenic. For lead, the highest level detected was 1564 ppm, compared to the state cleanup standard of 250 ppm.

3.0 DESIGN CONSIDERATIONS

3.1 STATE CLEANUP REGULATION

According to the state cleanup regulation¹, an “interim action” is distinguished from a “cleanup action” in that an interim action only partially addresses the cleanup of a site. (The remediation conducted under an interim action may end up constituting the complete cleanup action for a site, however, if the interim action subsequently is shown to meet requirements in the rule for a complete cleanup action.) The state regulation defines three categories of interim actions.

The interim action proposed for the Peshastin Dryden Elementary School and Lee Elementary School sites qualifies under the following one of the three categories defined in the state rule. WAC 173-340-430 (a) defines an interim action as “A remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at a facility.” By reducing the proximity of school children to the hazardous substances that will be hauled away from the site and by providing a better barrier between the children and the contaminants that remain, the interim action will reduce the threat to human health posed by the pathways of contact and ingestion.

WAC 173-340-430 (2) states that interim actions may:

- a. Achieve cleanup standards for a portion of the site
- b. Provide a partial cleanup, that is, clean up hazardous substances from all or part of the site, but not achieve cleanup standards; or
- c. Provide a partial cleanup of hazardous substances and not achieve cleanup standards, but provide information on how to achieve cleanup standards for a cleanup; for example, an unproven cleanup technology demonstration project.

¹WAC 173-340-430(1)

Additional requirements of an interim action, as stated in WAC 173-340-430, are that the interim action will be consistent with the cleanup action and that the interim action shall not foreclose reasonable alternatives for the cleanup action. (The rule provides the following qualifier to the latter requirement: “This is not meant to preclude the destruction or removal of hazardous substances.”) A Cleanup Action Plan has not yet been written for either the Peshastin Dryden Elementary and Chelan Middle School & High School, but this interim action is consistent with the typical cleanup alternatives considered for lead/arsenic contaminated sites in Central Washington.

3.2 INTERIM ACTION ALTERNATIVES

The following cleanup action alternatives were considered for the Peshastin Dryden Elementary and Lee Elementary School sites:

- No action – This option was not selected because the situation has not been stabilized at a status that gives sufficient assurance of ongoing isolation of the contaminated soil from school children.
- Institutional controls – Institutional controls do not address the contamination in the soil but rely on practices to control exposure to the contamination. Examples could include educating students and others about soil contamination; maintaining features such as existing grass which provide some barrier to contamination; preventing digging in the school yard; restricting access to the school yard; requiring students to wash hands following recess; having school maintenance staff wet-mop floors and use high efficiency particulate air (HEPA) filter vacuum cleaners; fencing; signage; and a restrictive covenant limiting use of the land. Institutional controls was not selected as the sole option because it is not considered as effective as other alternatives due to the difficulty in enforcing 100 percent compliance with some of the practices. Also, one institutional control (restricting access to the school yard) would render a playfield useless as a playfield even if it could be accomplished successfully. Despite these shortcomings, some institutional controls such as hand washing and prevention of digging do provide additional benefit when used in conjunction with more universally effective measures.
- **Capping the contaminated soil with a cover such as asphalt or a synthetic geotextile and clean imported soil – This option is considered effective and likely would be less expensive than the alternative options. Capping was selected as the interim action to be conducted at Peshastin Dryden and Lee Elementary School.**
- Deep Mixing – Contaminated soil would be mixed with underlying clean soils to a depth of four feet. Mixing of contaminated soils may reduce the overall soil contamination to a “clean” standard if area contaminant concentrations are not too high and do not extend too deep. Deep mixing is limited to areas where deep soils are present and relatively flat

terrain. Deep mixing of soil was not selected because contaminated soils are randomly contaminated at depth at concentrations higher than 40ppm arsenic and 500ppm lead.

- Removal of Contaminated Soil – Physical removal entails excavating soil, then transporting it off-site by truck for disposal at a properly permitted landfill. Physical removal is a very effective and permanent remediation technique. Physical removal of contaminated soil was not selected as contamination reaches up to four feet deep in places at both schools.

4.0 INTERIM CLEANUP ACTION PLAN

A qualified and experienced contractor will perform the following work during summer 2008:

At Peshastin/Dryden Elementary: Place a geotextile liner over contaminated areas; placement of eight inches of clean imported topsoil; create new turf; and raise the existing irrigation system to the new ground level.

At Lee Elementary: Place an asphalt cap over the contaminated area.

4.1 SAFETY AND HEALTH

The sites will be restricted to child access throughout the construction period. The Safety and Health Plan consists of measures to avoid construction hazards and good personal hygiene. No other known or special hazards exist at this site. The contractor will be required to provide a specific Safety and Health Plan for the site construction activities.

4.2 OPERATION AND MAINTENANCE PLAN

It is recommended that school districts develop an operation and maintenance plan which describes work practices to limit child and employee exposure to lead and arsenic contaminated soil remaining at the school and a 5-year review plan to ensure the remedy continues to be effective at the school. Institutional controls will be placed at the site that will include at a minimum: preventing digging below the geotextile liner, Ecology notification requirements, personal hygiene requirements, and worker safety during future construction activities.

5.0 ABBREVIATIONS AND ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act – a federal law
CFR	Code of Federal Regulations – federal regulations
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
MTCA	Model Toxics Control Act – a Washington state law

ppm	parts per million
RCRA	Resource Conservation and Recovery Act – a federal law
WAC	Washington Administrative Code – Washington state regulations
Method A	MTCA cleanup levels that are protective of human health and the environment