



WASHINGTON STATE  
DEPARTMENT OF  
**E C O L O G Y**

**INTERIM REMEDIAL ACTION PLAN  
SUNNYSLOPE ELEMENTARY SCHOOL AND  
ORCHARD MIDDLE SCHOOL  
WENATCHEE, WASHINGTON**

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## **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 includes 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**

The Department of Ecology proposes to excavate and haul away some soil contaminated with lead and arsenic for disposal at a permitted landfill, place a geotextile membrane above any remaining contaminated soil, import clean soil to the elementary school, and establish new grass in this clean soil. The plan includes repair and modification of the existing irrigation system (underground solid set sprinklers) to maintain the turf cover.

## **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, June 30, 2003, can be found on the world-wide web at [http://www.ecy.wa.gov/programs/tcp/area\\_wide/Final-Report/PDF/TF-Report-final.pdf](http://www.ecy.wa.gov/programs/tcp/area_wide/Final-Report/PDF/TF-Report-final.pdf).

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 or more permanent protection measures if contamination is found.

## **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 short- and long-term affects of lead and arsenic can be found at [http://www.doh.wa.gov/Topics/childhood\\_lead\\_poisoning.htm](http://www.doh.wa.gov/Topics/childhood_lead_poisoning.htm).

## **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 in Chelan County. The Wenatchee School District and Ecology agreed in 2004 to begin developing a comprehensive plan to address soil contamination. Ecology provided funding to pay for cleanup projects at five schools, initially in conjunction with already-planned remodeling projects.

## **2.4 SUNNYSLOPE ELEMENTARY AND ORCHARD MIDDLE SCHOOL SITE ASSESSMENT**

Of 164 soil samples taken from the Orchard Middle School playfield in November 2006, 98 samples exceeded the state cleanup standards for arsenic and 14 exceeded for lead. These 98 samples averaged 44 milligrams per kilogram arsenic compared to the state cleanup standard of 20 milligrams per kilogram for arsenic. For lead, the 14 samples averaged 375 milligrams per kilogram, compared to the state cleanup standard of 250 milligrams per kilogram.

Of 162 soil samples taken from the Sunnyslope Elementary School playfield in November 2006, 136 samples exceeded the state cleanup standards for arsenic and 141 exceeded for lead. The 136 arsenic samples averaged 67 milligrams per kilogram arsenic compared to the state cleanup standard of 20 milligrams per kilogram for arsenic. For lead, the 14 samples averaged 460 milligrams per kilogram, compared to the state cleanup standard of 250 milligrams per kilogram.

### **3.0 DESIGN CONSIDERATIONS**

#### **3.1 STATE CLEANUP REGULATION**

According to the state cleanup regulation<sup>1</sup>, 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 Wenatchee 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, 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.

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 the Wenatchee school sites, but this interim action is consistent with the cleanup typical alternatives considered for lead/arsenic contaminated sites in Central Washington.

#### **3.2 INTERIM ACTION ALTERNATIVES**

The following cleanup action alternatives were considered for the Sunnyslope Elementary and Orchard Middle School Sites:

- No action – This option was not selected because the situation has not been stabilized at a status that gives sufficient assurance of on-going isolation of the contaminated soil from school children.

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<sup>1</sup>WAC 173-340-430(1)

- **Capping the contaminated soil with a relatively impermeable cover such as a synthetic membrane and clean imported soil – This option was selected because it provides protection equal to the other options at a greatly reduced cost. Excavation would be ~300% more costly and deep mixing was not technically feasible at the sites.**
- 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 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 playfield) would render the playfield useless as a playfield even if 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.
- 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 was not selected because contaminant concentrations were too high to allow for successful deep mixing with out extensive excavation and removal of soil prior. In addition, the soil may be rocky or shallow in places.
- Removal of Contaminated Soil – Physical removal by excavation was not selected due to the large quantities of soil that would need to be removed. In some areas, up to three feet of soil would need to be removed and replaced with clean topsoil for successful remediation.

#### **4.0 INTERIM CLEANUP ACTION PLAN**

A qualified and experienced contractor will perform the following work during summer 2007:

Modification of existing irrigation equipment; placement of a geotextile membrane across all areas of each property that require remediation; placement of clean imported topsoil; placement of topsoil nutrient amendment as needed; and new turf.

#### **4.1 SAFETY AND HEALTH**

The site 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 & Health Plan for the site construction activities.

#### **4.2 OPERATION AND MAINTENANCE PLAN**

Wenatchee School District will develop an operation and maintenance plan which describes work practices to limit child and employee exposure to lead and arsenic contaminated soil.

### **5.0 ABBREVIATIONS AND ACRONYMS**

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| 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                                     |
| RCRA    | Resource Conservation and Recovery Act – a federal law                                |
| WAC     | Washington Administrative Code – Washington state regulations                         |