



**INTERIM REMEDIAL ACTION PLAN
GILBERT ELEMENTARY SCHOOL
ROBERTSON ELEMENTARY SCHOOL
YAKIMA, WASHINGTON**

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Toxics Cleanup Program
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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 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 two elementary schools, the Department of Ecology (Ecology) proposes to excavate and haul away some soil contaminated with lead and arsenic for disposal at a permitted landfill, mix remaining soils to reduce peak arsenic and lead levels, place clean soil on top of the existing soil, and establish new grass in this clean soil. The plan includes installation of an irrigation system (underground solid set sprinklers) to maintain the turf cover at each school.

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.

2.4 GILBERT ELEMENTARY SCHOOL SITE ASSESSMENT

Of 35 soil samples taken from the property at Gilbert Elementary School in February 2005, 34 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 146 ppm, compared to the state cleanup standard of 20 ppm for arsenic. For lead, the highest level detected was 804 ppm, compared to the state cleanup standard of 250 ppm.

2.5 ROBERTSON ELEMENTARY SCHOOL SITE ASSESSMENT

Of 36 soil samples taken from the property at Robertson Elementary School in February 2005, 20 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 61 ppm, compared to the state cleanup standard of 20 ppm for arsenic. For lead, the highest level detected was 393 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 Gilbert Elementary School site and the Robertson Elementary School site 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.

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 Gilbert Elementary School site or the Robertson Elementary School site, but this interim action is consistent with the typical cleanup alternatives considered for lead/arsenic contaminated sites in Central Washington. The removal of some of the contaminated soil does foreclose the option of capping this same soil in place, but the qualifier quoted above clearly allows such a removal.

¹WAC 173-340-430(1)

3.2 INTERIM ACTION ALTERNATIVES

The following cleanup action alternatives were considered for the Gilbert Elementary School and Robertson 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 on-going 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 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 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 a synthetic geotextile and clean imported soil – This option is considered effective and likely would be less expensive than the chosen option. Capping was not selected because a remedy existed that was more permanent, feasible, and did not require the on-going specialized maintenance of the cap.
- 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 selected as one component of the interim action to be conducted at Gilbert Elementary School and Robertson Elementary School.
- 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 selected as one component of this interim action. It will be used at both elementary schools, but will be used more extensively at Gilbert Elementary School due to the higher levels of contamination measured there.

4.0 INTERIM CLEANUP ACTION PLAN

A qualified and experienced contractor will perform the following work during summer 2006:

Excavation of approximately the top 6 inches of existing turf and soil in the areas of highest contamination and disposal of this material at a properly permitted landfill meeting the requirements of RCRA Subtitle D; mixing the remaining soil; removal and reinstallation of existing playground equipment; removal of the existing irrigation system and installation of a new irrigation system; and placement of clean imported topsoil and new turf.

The excavation would be accomplished by front-end loader, bulldozer, or similar mobile equipment. Deep mixing would be accomplished by a specialized piece of equipment capable of mixing soil down to a depth of four feet. This specialized piece of equipment works something like a large Rototiller.

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 & Health Plan for the site construction activities.

4.2 OPERATION AND MAINTENANCE PLAN

It is recommended that Yakima School District 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

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