

EMERGING ISSUES: EXISTING SCHOOLS

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Introduction

DTSC has been actively involved in school projects since 1995. An emerging issue has been the increasing awareness of the potential magnitude of the problem of environmental contamination on existing school properties, particularly since many of these schools were built 30 to 40 years ago. DTSC has identified a number of existing schools with problems. Some of these schools were built on poorly characterized and/or incompletely remediated sites. Even when the original school was built on clean property, it is not unusual for commercial and industrial facilities to be located adjacent or near the schools after the schools had been built, subsequently contaminating the school site. The following are three examples of DTSC investigations at existing schools.

Burbank Elementary School, San Bernardino

Burbank Elementary School was built in the 1920's in what was then a largely agricultural area in San Bernardino. During 1960's a pesticide company, which specialized in the treatment of homes and buildings, moved into a building next to the school playground. When the current pesticide company was conducting an environmental investigation of their property before moving to a new location, it was discovered that organochlorine pesticides, including chlordane, dieldrin, and DDT, had spread to the adjacent grass playground area of the school. The problem was brought to the attention of DTSC by County of San Bernardino late in summer of 2000. DTSC worked with the company and the school district in the investigation and remediation of the school property.

Pesticides Found on the School Playground

Chlorinated pesticides were found on about two thirds of the grass playground and the highest concentrations were found near the fence line at the pesticide facility. The pesticide contamination was found in the surface and top few feet of soil. All of the pesticides found on site are considered to be carcinogenic. The range of the pesticide concentrations found in soil on the school are shown below along with cleanup goals used for the removal action.

Soil Removal

Between 1 ½ to 5 feet of soil were removed from the Burbank Elementary Play ground in September 2000. The school was closed for six weeks during the soil removal action, backfilling with clean soil, and restoration of the playground. The soil was disposed of as hazardous waste and continuous watering and plastic sheeting of the excavated areas minimized or eliminated dust emissions to the school and neighboring properties. Burbank Elementary School was reopened in October 2000.



Range of Pesticides in Soil on Burbank Elementary School Playground		
Pesticide	Soil Concentrations (ppm)	Cleanup Goals (ppm)
DDT	0.003 - 6.660	0.151
Dieldrin	0.012 - 86.580	0.003
Heptachlor	0.004 - 24.808	0.013
alpha-Chlordane	0.028 - 126.54	0.04
gamma-Chlordane	0.012 - 141.52	0.04



Avalon K-12 Schools, Avalon, Catalina Island

Avalon School is the only public school on Catalina Island and houses all grades, K-12. Some buildings on the school site were constructed in the early 1920s and an on-site incinerator operated from at least 1939 until the early 1970s. Bungalows were added during the period 1988-1998. The School covers about 11.5 acres.

School modernization activities were initiated in June 2001 and included trenching activities for installation of utility conduits. Suspicious ash-like material and debris were discovered in the playground area of the elementary grades. Samples were collected from the ash in the trenches and from soils stockpiled in roll-off bins that were accumulating at the campus. Analytical tests revealed that there were high levels of lead (N=13; 0.5 to 2700 ppm) present in the soil. Follow up sampling, at the recommendation of DTSC, confirmed the presence of elevated levels of dioxins and furans (N = 6; <10 to 351 ppt-TEQ) in the ash and soil.

Closure of School

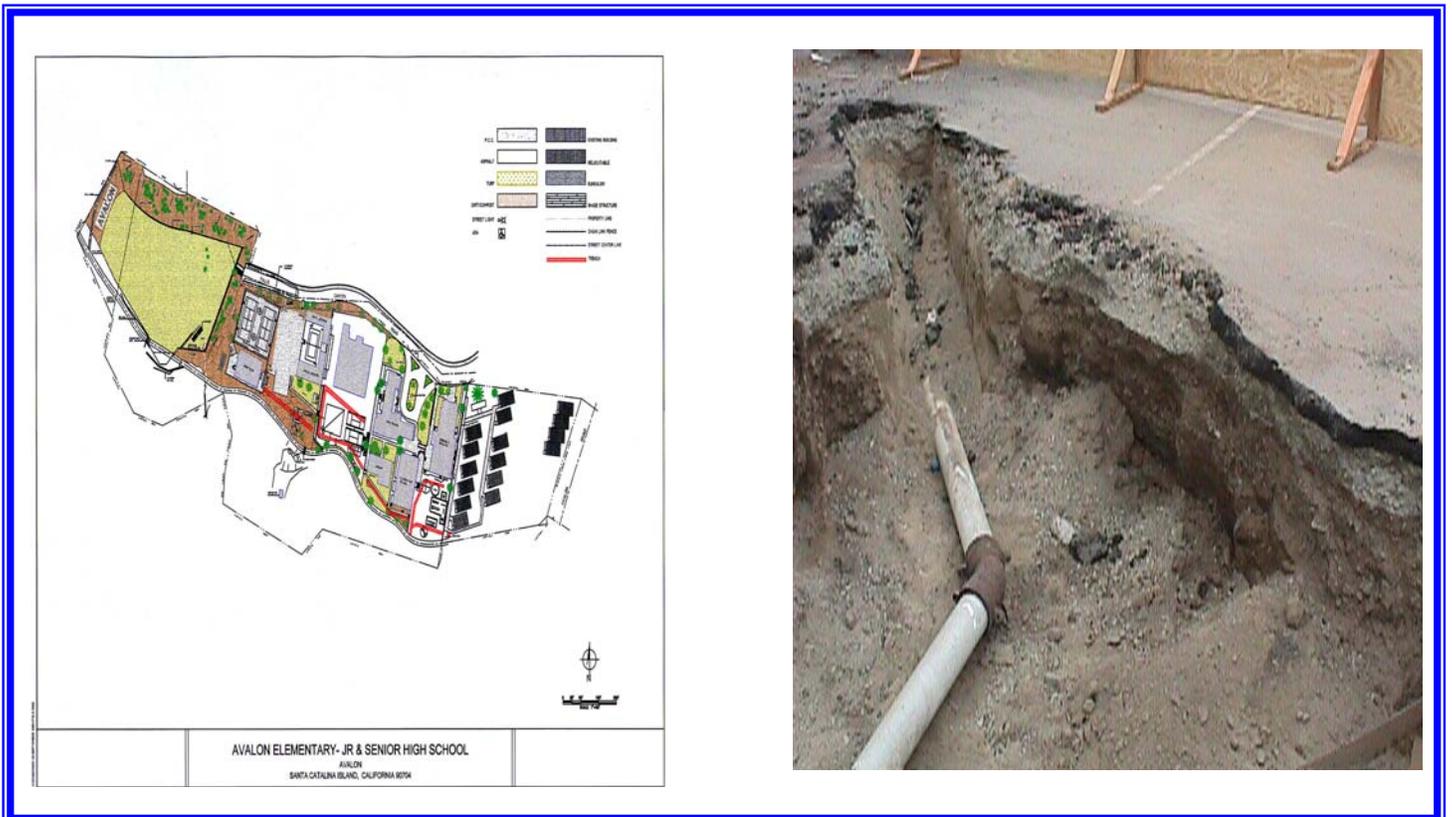
In consultation with the School District, DTSC, and the parents, Avalon School was closed for three weeks while an investigation of current conditions was initiated at the school. During this time surface soil was analyzed from across the campus and roll-off bins containing contaminated soil from the original trenching activities were removed from the school grounds.

Contamination Found at the School

DTSC provided oversight of the preliminary surface soil investigation of the school campus at the request of the School District. Samples were collected across the campus and analyzed for lead, PAHs, PCBs, and dioxins and furans. Most of the surface areas of the school were not contaminated with lead or dioxins and furans; however two surface areas were identified in the investigation (Pb; 0.64 to 884 ppm) (Dioxins / furans; ND to 168 ppt-TEQ). Both of these areas are currently restricted from access by staff and students. DTSC supported re-occupation of the school. The area with the shallow buried ash still remains fenced off and inaccessible to students and staff.

Further Action

DTSC has continued the investigation of the deeper soils on school site and is working closely with the School District towards a final remediation. Soil removal of the contaminated ash and surrounding soil is scheduled for summer 2002.



Jersey Elementary School, Santa Fe Springs

Jersey Elementary School was built in the late 1950s on property purchased from a company that used the land for wastewater treatment ponds for petroleum and some industrial wastes. Wastes from these ponds had overflowed into the area that became the playground of the school. During trenching for footings for new portables in the playground in the spring of 2001, soils contaminated with oil/tarry wastes were encountered. DTSC was notified and a remedial investigation was undertaken in 2001 to investigate potential sources and types of contamination as well as potential routes of exposure to persons using the school.

Contamination Found at School

The investigation, which was focused on soil and vapors, found high levels of lead (up to 3,420 mg/kg) and asphalt-like petroleum hydrocarbons (TPH) (up to 45,000 mg/kg) in the soil below the surface. The contaminated soils were found primarily throughout the grassy playground area. Low levels of polyaromatic hydrocarbons (PAHs) were also found.

A human health risk assessment was performed to look at the potential for adverse health effects. The results of the risk assessment indicated that TPH, PAHs, and lead found in the subsurface soils pose a significant health risk. Concentrations of these chemicals in the immediate surface soils (0-6") were much lower and do not pose a significant health risk to children and teachers. The contamination starts at the surface in some areas and ranges to about 5 feet below the surface at its deepest. The highest concentrations of these chemicals are in the shallow subsurface soils (1-5 feet below the surface).

Future Remediation and Investigation

Because the concentrations in the soil and the potential health risks are high, it was decided that a large portion (approximately 10,000 tons) of the playground soil should be removed and sent offsite for treatment. After the soil has been treated, removing the contamination, it will be recycled and used elsewhere. The excavated area at the school will be filled in with clean soil and will be reseeded or paved as appropriate. In the meantime, the playground area has been fenced off until the soil removal action is completed. Soil removal action is scheduled for summer 2002.

The park adjacent to the school where the original waste ponds were located is being investigated by DTSC. Initial results indicate high amounts of TPH, lead and methane in the subsurface soils.

