

I. HAZARDS AND HAZARDOUS MATERIALS

INTRODUCTION

Abbott Laboratories will use some hazardous materials in its research, manufacturing, and office activities, as well as in the operation and maintenance of the proposed buildings.

A substance may be considered hazardous for a number of reasons, including its toxicity, ignitability, corrosivity, or reactivity. The term “hazardous material” is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.¹

Once a hazardous material becomes ready to be discarded, it becomes a hazardous waste. A hazardous waste, for the purpose of this report, is any hazardous material that is abandoned, discarded, or (planned to be) recycled.² In addition, hazardous wastes may occasionally be generated by actions that change the composition of previously non-hazardous materials. The same criteria that render a material hazardous make a waste hazardous.

The transportation, use, and disposal of hazardous materials, as well as the potential releases of hazardous materials to the environment are closely regulated.

REGULATORY SETTING

Abbott Laboratories is subject to substantial government health and safety regulations applicable to the transportation, use, and disposal of all forms of hazardous materials. This section provides an overview of the regulatory setting that would be applicable to health and safety at the project site and introduces Abbott Laboratories’ current health and safety policies and procedures.

Research activities are subject to numerous laws and regulations at all levels of government. A summary of federal, state, local, and laws and regulations most important to the storage, use, and disposal of hazardous materials and to safety hazards at the project site is provided below.

FEDERAL

The primary federal agencies with responsibility for hazardous materials management include the U.S. Environmental Protection Agency (EPA), U.S. Department of Labor Occupational Safety and Health Administration (Fed/OSHA), and the U.S. Department of Transportation (DOT). A summary of Federal laws, regulations, and responsible agencies is shown in Table IV.I-1.

¹ State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

² State of California, Health and Safety Code, Chapter 6.95, Section 25124.

**TABLE IV.I-1
FEDERAL LAWS AND REGULATIONS RELATED TO
MANAGEMENT OF HAZARDOUS MATERIALS**

Classification	Law or Responsible Federal Agency	Description
Hazardous Materials Management	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA))	Imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
Hazardous Waste Handling	Resource Conservation and Recovery Act of 1976 (RCRA)	Under RCRA, the EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from “cradle to grave.”
	Hazardous and Solid Waste Act	Amended RCRA in 1984, affirming and extending the “cradle to grave” system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.
Hazardous Materials Transportation	U.S. Department of Transportation (DOT)	Has the regulatory responsibility for the safe transportation of hazardous materials. The DOT regulations govern all means of transportation except packages shipped by mail (49 CFR).
	U.S. Postal Service (USPS)	USPS regulations govern the transportation of hazardous materials shipped by mail.
Occupational Safety	Occupational Safety and Health Act of 1970 (OSHA)	Fed/OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries (29 CFR).
Toxic Air Contaminants	U.S. EPA – 1990 Clean Air Act Amendments	189 substances, including all designated Hazardous Air Pollutants are regulated under a two-phase strategy: installation of Maximum Achievable Control Technology (MACT) standards and determination of the residual health risk represented by air toxic emissions sources after implementation of MACT standards.
Radioactive Materials¹	Atomic Energy Act	Administered by the Nuclear Regulatory Commission, the act regulates the use and control of radioactive material. ²
Biosafety Standards³	The U.S. Public Health Service, the National Institute of Health (NIH), and the Centers for Disease Control and Prevention (CDC)	Operated under the U.S. Department of Health and Human Services, these agencies establish standards for working with biohazardous materials.
Structural and Building Components (USTs⁴, PCBs⁵, and asbestos⁶)	Toxic Substances Control Act (40 CFR)	Regulates the use and management of PCBs in electrical equipment, and sets forth detailed safeguards to be followed during the disposal of such items.
	U.S. EPA	EPA requires that Underground Storage Tank (UST) owners and operators register their tanks. The EPA banned the use of asbestos in the 1970’s.

¹ U.S. Nuclear Regulatory Commission, Atomic Energy Act of 1954, as amended, <http://www.nrc.gov/who-we-are/governing-laws.html>, accessed November 15, 2002.

² Radioactive material is any material or combination of materials that spontaneously emit ionizing radiation.

³ A hazardous biologic material is any potentially harmful biologic material (including infectious agents, oncogenic viruses, and recombinant DNA) or any material contaminated with a potentially harmful biologic material.

⁴ Underground Storage Tanks (USTs)

⁵ Polychlorinated Biphenyls (PCBs) are organic oils that were formerly placed in many types of electrical equipment, including transformers and capacitors, primarily as electrical insulators. It has now been discovered that exposure to PCBs may cause various health effects, and that PCBs are highly persistent in the environment.

⁶ Asbestos is a naturally occurring fibrous material used as a fireproofing and insulating agent in building construction before such uses were banned by the EPA in the 1970’s.

SOURCE: Environmental Science Associates, 2002.

In most cases, state law mirrors or overlaps federal law, and enforcement of these laws is the responsibility of the state or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of the law and its enforcement are discussed under the state or local agency section.

STATE

Hazardous Materials Management

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that any business that handles hazardous materials prepare a business plan, which must include the following:³

- details, including floor plans, of the facility and business conducted at the site
- an inventory of hazardous materials that are handled or stored on site
- an emergency response plan
- a safety and emergency response training program for new employees with annual refresher courses

In January 1996, the California Environmental Protection Agency (Cal EPA) adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements: hazardous waste generators and hazardous waste on-site treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Uniform Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level. The local agency that is responsible for the implementation of the Unified Program is called the Certified Unified Program Agency (CUPA).⁴ In Redwood City, the San Mateo County Environmental Health Division (EHD) is the designated CUPA.

Hazardous Waste Handling

Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements. The EPA must approve state programs intended to implement federal regulations. In California, Cal EPA and the Department of Toxic Substances Control (DTSC), a department within Cal EPA, regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The EPA approved California's RCRA program, called the Hazardous Waste Control Law (HWCL), in 1992. DTSC has primary hazardous material regulatory responsibility, but can delegate

³ "Hazardous Materials Release Response Plans and Inventory Law," California Health and Safety Code, Chapter 6.95.

⁴ California Environmental Protection Agency, 27 CCR. <http://www.calepa.ca.gov/Publications/Title27/>, accessed November 14, 2002.

enforcement responsibilities to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe the management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. Hazardous waste manifests must be retained by the generator for a minimum of three years, and provide a description of the waste, its intended destination, and regulatory information about the waste. A copy of each manifest must be filed with the state. The generator must match copies of hazardous waste manifests with receipts from treatment, storage, and disposal facilities.

Contaminated soils and other hazardous materials removed from a site during construction or remediation may need to be handled as hazardous waste. In San Mateo County, remediation of contaminated sites is performed under the oversight and with the cooperation of the San Mateo County EHD and the Regional Water Quality Control Board (RWQCB).

Hazardous Materials Transportation

The State of California has also adopted U.S. DOT regulations for the intrastate movement of hazardous materials. State regulations are contained in 26 CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (26 CCR). Both regulatory programs apply in California.

The two state agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and Department of Transportation (Caltrans).

The CHP enforces hazardous material and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill identification teams at as many as 72 locations throughout the state that can respond quickly in the event of a spill. In addition, the State of California regulates the transportation of hazardous waste originating or passing through the state.

Common carriers are licensed by the CHP, pursuant to California Vehicle Code Section 32000. This section requires the licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards.

Every hazardous waste package type used by a hazardous materials shipper must undergo tests that imitate some of the possible rigors of travel. While not every package must be put through every test, most packages must be able to be kept under running water for a time without leaking;

dropped, fully loaded, onto a concrete floor; compressed from both sides for a period of time; subjected to low and high pressure; and frozen and heated alternately.

Building and Fire Safety

The Redwood City Community Development Services Department, Building and Inspection, enforces the 1997 California Building Code, and the RCFD enforces the 1997 Uniform Fire Code as amended. These laws specify management practices for flammable materials, including some packaging and containment requirements. They also set forth appropriate construction standards (e.g., fire separations and fire suppression systems) depending on building occupancy classifications. The Building and Safety Division reviews proposed building design plans to ensure compliance with Uniform Building Code requirements.

Occupational Safety

In California, Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in 29 CFR. Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations (8 CCR) concerning the use of hazardous materials in the workplace require employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that Materials Safety Data Sheets (MSDSs) be available to employees, and that employee information and training programs be documented. These regulations also require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

State laws, like federal laws, include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals listed in 29 CFR. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be provided and maintained in accessible places.

Cal/OSHA (8 CCR), like Fed/OSHA (29 CFR) includes extensive, detailed requirements for worker protection applicable to any activity that could disturb asbestos-containing materials, including maintenance, renovation, and demolition. These regulations are also designed to ensure that persons working near the maintenance, renovation, or demolition activity are not exposed to asbestos.

Since 1991, Cal/OSHA has required every employer to establish, implement, and maintain an Injury and Illness Prevention Program (IIPP). The program must be in writing and must, at a minimum:

- identify the person or persons with authority and responsibility for implementing the program.
- include a system for ensuring that employees comply with safe and healthy work practices. (Substantial compliance with this provision includes recognition of employees who follow safe and healthful work practices, training and retraining programs, disciplinary actions, or any other such means that ensures employee compliance with safe and healthful work practices.)
- include a system for communicating with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. (Substantial compliance with this provision includes meetings, training programs, posting, written communications, a system of anonymous notification by employees about hazards, labor/management safety and health committees, or any other means that ensures communication with employees.)⁵

At sites known to be contaminated, a Site Safety Plan must be prepared to protect workers. The Site Safety Plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Radioactive Materials

Pursuant to the federal Atomic Energy Act requiring states to assume responsibility for the use, transportation, and disposal of low-level radioactive material and for the protection of the public from radiation hazards, the California Department of Health Services Radiologic Health Branch (RHB) administers the state's Radiation Control Law, which governs the storage, use, transportation, and disposal of sources of ionizing radiation (radioactive material and radiation-producing equipment). Radioactive material regulations require registration of sources of ionizing radiation, licensing of radioactive material, and protection against radiation exposure. The RHB also regulates the transportation of radioactive materials and disposal of radioactive waste. Users of radioactive materials must maintain detailed records regarding the receipt, storage, transfer, and disposal of such materials.⁶ State regulations concerning radioactive substances are included in 17 CCR. The regulations specify appropriate use and disposal methods for radioactive substances, as well as worker safety precautions and worker health monitoring programs.

In addition, Senate Bill 2065 (SB 2065) relating to radioactive waste was signed into law on September 25, 2002. This bill requires the Department of Health Services (DHS) to establish reporting procedures through a public hearing process for low-level radioactive waste (LLRW) and requires generators of LLRW to annually report specified information to DHS, thereby

⁵ California Code of Regulations, Title 8, Section 3203, <http://www.dir.ca.gov/Title8/3203.html>, accessed November 18, 2002.

⁶ State of California, Radiologic Health Branch, <http://www.dhs.cahwnet.gov/rhb/>, accessed November 15, 2002.

imposing a state-mandated local program by creating a new crime. The bill requires the department to maintain a file of all LLRW transferred to a licensed LLRW disposal facility during the reporting period and a file on each generator's stored LLRW. DHS is required to prepare a report, including an annual set of tables summarizing data collected from the generators of LLRW. The bill prohibits the department from making the report available to the public and excludes the report from the operation of the California Public Records Act.⁷

Currently, low-level radioactive waste is trucked out of state and disposed of in South Carolina. This disposal arrangement is scheduled to end in the year 2008. The disposal method for low-level radioactive waste from California beyond that timeframe has not yet been resolved.

Biosafety Standards

Similar to federal laws, state laws establish standards for working with biohazardous materials. A hazardous biologic material is any potentially harmful biologic material (including infectious agents, oncogenic viruses, and recombinant DNA) or any material contaminated with a potentially harmful biologic material. The U.S. Public Health Service, the National Institute of Health (NIH), and the centers for Disease Control and Prevention (CDC) operate under the U.S. Department of Health and Human Services. These agencies establish standards for working with biohazardous materials.

Structural and Building Components

Asbestos

Similar to federal laws, state laws and regulations also pertain to building materials containing asbestos. Inhalation of airborne fibers is the primary mode of asbestos entry into the body, making friable (easily crumbled) materials the greatest health threat. These regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local governmental agencies prior to beginning renovation or demolition that could disturb asbestos.

Underground Storage Tanks

State laws governing USTs specify requirements for permitting, monitoring, closure, and cleanup. Regulations set forth construction and monitoring standards for existing tanks, release reporting requirements, and closure requirements. The San Mateo County Environmental Health Division (San Mateo County EHD) is the local agency designated to permit and inspect USTs and to implement applicable regulations.

⁷ State of California Legislative Council, "Official California Legislative Information," <http://www.leginfo.ca.gov>, accessed November 6, 2002.

Hazardous Materials Emergency Response

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the state Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the EPA, CHP, the California Department of Fish and Game (CDFG), the regional water quality control boards (RWQCBs), the local air pollution control districts, and local agencies.

Pursuant to the Business Plan Law, local agencies are required to develop “area plans” for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the Business Plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning and procedures for emergency response, notification, and coordination of affected governmental agencies and responsible parties, training, and follow up.

In addition, California Accidental Release Prevention Program (CalARP) regulations became effective January 1, 1997, replacing the California Risk Management and Prevention Program. CalARP was created to prevent the accidental release of regulated substances. It covers businesses that store or handle certain volumes of regulated substances at their facilities. A list of regulated substances is found in Section 2770.5 of the CalARP regulations. If a business has more than the listed threshold quantity of a substance, an accidental release prevention program must be implemented and a risk management plan may be required. The California Office of Emergency Services is responsible for implementing the provisions of CalARP; however, local governments often have the lead role in working directly with the businesses in this program.⁸ In Redwood City, the CUPA, which is the San Mateo County EHD, has this responsibility.

Toxic Air Contaminants

California state law defines a Toxic Air Contaminant (TAC) as “an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health” (California Health and Safety Code, Section 39655). A total of 191 substances, including 189 federal Hazardous Air Pollutants (HAP), have been designated TACs under California law

The project site is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws. It controls stationary source TAC emissions through its Air Toxic Risk Evaluation Procedure and Risk Management Policy, which requires that all new or modified air emission sources, such as the proposed project, be reviewed for TACs that may result in adverse health effects.

⁸ State of California, Governor’s Office of Emergency Services, <http://www.oes.ca.gov>, accessed March 31, 2003.

The California Code of Regulations, Title 8, contains California Occupational Health and Safety Administration (Cal/OSHA) requirements for fume hoods, one of the sources for toxic emissions from research and manufacturing facilities. The regulations focus on worker health and safety, requiring a minimum flow volume, flow velocity at the working face of the hood, and certain design features to protect laboratory personnel in their work.

LOCAL

San Mateo County Hazardous Waste Management Program

Assembly Bill (AB) 2948 requires counties, and cities, either to adopt a county hazardous waste management plan as part of its general plan, or enact an ordinance requiring that all applicable zoning subdivision, conditional use permit, and variance decisions be consistent with the county hazardous waste management plan. Once each County had its Hazardous Waste Management Program approved by the State, each city had 180 days to either adopt a City Hazardous Waste Management Plan containing specified elements consistent with the approved County Hazardous Waste Management Plan; incorporate the applicable portions of the approved Plan, by reference, into the City's General Plan; or enact an ordinance which requires that all applicable zoning, subdivision, conditional use permits, and variance decisions are consistent with the specified portions of the plan. The County of San Mateo has adopted a Hazardous Waste Management Program that addresses procedures for hazardous materials incidents; Redwood City has adopted the applicable portions of the County program.

City of Redwood City Strategic General Plan

Hazards and hazardous materials are addressed in the Safety Element of the Redwood City Strategic General Plan, which contains the following pertinent objectives and policies related to hazards and hazardous materials:

- Protect City residents from the risk inherent in the use, storage, transport, and distribution of hazardous materials (Objective 2, p. 12-3).
- Protect the safety of people on the ground and in aircraft in flight in the vicinity of San Carlos Airport (Objective 4, p. 12-3).
- New development should provide adequate access for emergency vehicles, particularly fire fighting equipment, as well as provide secure evacuation routes for the inhabitants of the area (Policy S-7, p. 12-3).
- Regulate land uses surrounding airports to assure airport safety. Measures may include restrictions on permitted land uses and development criteria (Policy S-12, p. 12-4).

San Mateo County Airport Land Use Plan

The project site is located within the San Carlos Airport Land Use Plan area, under the jurisdiction of the City/County Association of Governments (C/CAG) of San Mateo County. The C/CAG of San Mateo County, in its designated role as the Airport Land Use Commission

(ALUC) for San Mateo County, has adopted the provisions in Federal Aviation Regulations (FAR) Part 77, “Objects Affecting Navigable Airspace”, as amended, to establish height restrictions and federal notification requirements for project sponsors, related to proposed development within the FAR Part 77 airspace boundaries for San Carlos Airport. Guidelines for determining whether an object is an obstruction to air navigation are set forth in FAR Part 77. The FAR Part 77 regulations contain three key elements: standards for determining obstructions in navigable airspace; requirements for construction notification if it may affect airspace; and provisions for preparation of aeronautical studies conducted by Federal Aviation Administration (FAA) staff. The ALUC has adopted the provisions in FAR Part 77 for civil airport imaginary surfaces for airspace protection and to establish height restrictions for natural and man-made objects in the vicinity of San Carlos Airport.

Any proposed or new construction or expansion of existing structures that would penetrate any of the FAR Part 77 Imaginary Surfaces Height Restrictions would be deemed an incompatible use unless determined otherwise by the FAA.

SETTING

REGULATORY COMPLIANCE RECORD

This section provides a brief review of facility inspections, citations issued, recommendations offered, and other actions taken by regulatory agencies regarding the existing Perclose operations, including research and manufacturing, within the past five years.

San Mateo County

The San Mateo County EHD has local jurisdiction over several areas of regulatory compliance, including hazardous materials permits, inspections and monitoring of hazardous materials, USTs, and hazardous waste generation and disposal.

San Mateo County EHD last inspected the existing Perclose facility on November 12, 2002. The inspection found no violations. Moreover, there has been no pattern of violations at the existing Perclose site over the last five years.

Radiologic Health Branch

The Radiologic Health Branch (RHB) of the California Department of Health Services monitors radiologic health and safety. RHB inspections document terms and conditions set forth in Radioactive Materials Licenses and California’s radiation control regulations. There have been no violations at the Perclose site.

Cal/OSHA

Cal/OSHA conducts inspections in response to complaints from employees and referrals from Occupational Safety personnel. Cal/OSHA has not inspected the Perclose facility, and correspondingly, no violations have been recorded.

HAZARDOUS MATERIALS USE, STORAGE, AND DISPOSAL

This section describes current hazardous material use, storage, and disposal at the current Perclose facility in Redwood City.

Hazardous Chemicals

Table IV.I-2 presents the quantities of the primary, solid, and gaseous chemicals that are currently present at the existing Perclose facility. The list in Table IV.I-2 includes only those chemicals that are used in quantities greater than about two gallons of liquid or about ten pounds of solid in any year. Compressed gases are listed regardless of the quantity that would be used. Other chemicals are currently used, but these are generally in smaller quantities. Hazardous chemical use and hazardous and biohazardous waste generation information presented in the preceding tables (Tables IV.I-2 through IV.I-4) are required to correspond with the Hazardous Materials Inventory Statements and Hazardous Materials Business Plan currently on record with the Redwood City Fire Department.

As a consequence of hazardous materials use, hazardous waste is usually generated. Hazardous materials are currently used in Perclose operations. Any hazardous material that is not consumed and can no longer be is designated as a hazardous waste material. A breakdown of the current hazardous waste generation is provided in Table IV.I-3.

Radioactive Materials

Radioactive materials contain radioactive atoms that emit detectable ionizing radiation (capable of causing chemical changes in cells). Radiation can result in such acute health effects as headache or burn, and such chronic health effects as cancer and birth defects. Most current work with radioactive materials involves handling relatively small quantities of radioactive materials that are currently used at the Perclose facility. This waste consists almost entirely of discarded gloves, paper wipes, laboratory glassware and equipment, etc. According to Abbott Laboratories' Corporate Environmental Services Department, Perclose does not generate any low-level radioactive waste (Michols, 2003).

Biohazardous Materials

Biohazardous materials may contain infectious agents or certain recombinant DNA molecules that contribute to human disease or mortality. The potential for disease would depend on the type of infectious agent considered. The level of potential hazard is indicated by the biosafety level precautions that are recommended. A biohazardous material is one that would generally require Biosafety Level 2 or greater storage, handling, and disposal precautions (i.e., appropriate for agents that can cause human disease through cuts, ingestion, or mucous membrane exposure, but not serious or lethal diseases through aerosol transmission.)

Different types of biological materials are currently used at the Perclose facility. The current use of biohazardous materials involves small quantities of the types of materials listed in Table IV.I-4.

**TABLE IV.I-2
EXISTING HAZARDOUS MATERIAL USE BY PERCLOSE**

Location	Chemical Type	Estimated Quantity
Machine Shops	Various oils	25 gallons
	Cimstar metal working fluids	10 gallons
	LB5000 metal working fluids	15 gallons
	WD-40 lubricant	5 gallons
	Acetylene gas	200 cubic feet
	Argon gas	200 cubic feet
	Isopropyl alcohol	<10 gallons
Failure Test & Analysis Lab	Clorox bleach	50 gallons
	Isopropyl alcohol	<5 gallons
Microbiology Lab	Isopropyl alcohol	<10 gallons
R&D Laboratories	Envirocide disinfectant	5 gallons
	Isopropyl alcohol	<10 gallons
	Clorox bleach	5 gallons
	Nitrogen refrigerated liquid	2,000 gallons
	Argon refrigerated liquid	1,200 gallons
	Compressed argon gas	8,400 cubic feet
	Compressed nitrogen gas	<200 gallons
	Compressed carbon dioxide gas	<500 gallons
	Ethanol	<55 gallons
	Compressed oxygen gas	21,000 cubic feet
	Acetone	<10 gallons
Methylene Chloride	<10 gallons	
Quality Test Lab	Isopropyl alcohol	<10 gallons
Manufacturing Engineering Lab	Isopropyl alcohol	<10 gallons
Manufacturing	Isopropyl alcohol	500 gallons
Parts Washing	Isopropyl alcohol	3,500 gallons
	Loctite adhesives	30 gallons
Molding Shop	Gear oil	5 gallons
Janitorial Areas	Clear ammonia	1,300 gallons
	Disinfectant cleaner	600 gallons
	Floor stripper	50 gallons
	Floor wax	50 gallons

SOURCE: Abbott Laboratories, 2003.

**TABLE IV.I-3
EXISTING HAZARDOUS WASTE GENERATION BY PERCLOUSE**

Location	Waste Type	Estimated Quantity
Machine Shops	Machine coolant	30 gallons per month
Failure Test & Analysis Lab	Bleach	80 gallons per month
Microbiology Lab	None	Not applicable
R&D Laboratories	Spent adhesives Isopropyl alcohol	Less than 10 pounds per month Less than 10 gallons per month
Quality Test Lab	Spend adhesives	Less than 3 pounds per month
Manufacturing Engineering Lab	None	Not applicable
Manufacturing	Spent isopropyl alcohol-laden cleaning wipes	Twelve 55-gallon drums per month
	Spent adhesives	Six 5-gallon containers per month
	Spent isopropyl alcohol	Four 30-gallon drums per month
Parts Washing	Spent Isopropyl alcohol	60 to 100 gallons per month
	Spent isopropyl alcohol-laden cleaning wipes	Less than one 55-gallon drum per month
Molding Shop	None	Not applicable
Janitorial Areas	Clear ammonia	1,300 gallons
	Disinfectant cleaner	600 gallons
	Floor stripper	50 gallons
	Floor wax	50 gallons

SOURCE: Abbott Laboratories, 2003.

STRUCTURAL AND BUILDING MATERIALS AND EQUIPMENT

Structural and building materials and equipment currently at the project site that contain hazardous materials include polychlorinated biphenyls (PCBs), asbestos, an aboveground storage tank (AST), and an underground storage tank (UST).

Polychlorinated Biphenyls

Federal law has prohibited the manufacture of electrical equipment containing PCB fluid since 1977. However, existing electrical transformers, capacitors, generators, and fluorescent light ballasts older than 1977 may contain PCB fluid. The EPA under the Toxic Substance Control Act recognizes PCBs as a toxic substance. Any transformer containing PCBs at a concentration of 500 parts per million (ppm) or greater is subject to violations.

**TABLE IV.I-4
EXISTING BIOHAZARDOUS WASTE GENERATION BY PERCLOUSE**

Location	Waste Type	Estimated Quantity
Machine Shops	None	Not applicable
Failure Test & Analysis Lab	Blood contaminated devices and other material	Four 20-gallon containers per month
Microbiology Lab	Agar-filled sample plates/strips and lab gloves	One 20-gallon container per month
R&D Laboratories	Human and animal tissue and material contaminated with blood	Less than one 20-gallon container per month
Quality Test Lab	None	Not applicable
Manufacturing Engineering Lab	None	Not applicable
Manufacturing	None	Not applicable
Parts Washing	None	Not applicable
Molding Shop	None	Not applicable
Janitorial Areas	None	Not applicable

SOURCE: Abbott Laboratories, 2003.

Electrical service is provided by Pacific Gas & Electric (PGE) through three pad-mounted 250 kVa transformers, adjacent on the north side of the salt wash equipment and one located on the southeastern side of the subject property. The transformer located on the southeastern side of the subject property was installed by PGE in the 1980s and therefore, based on its age, does not likely contain PCBs. The three units near the salt wash equipment are original equipment and were tested for PCBs in 1996. Results of the testing indicated that there were no detectable PCBs in one transformer and PCBs were present at 2 ppm and 3 ppm in the remaining two transformers. Additionally, in 2000, four shallow subsurface soil samples and one wipe sample were collected from the area around the transformers and analyzed for PCBs. No PCBs were detected in any of the samples (InteGreyeted Consultants, 2000).

Asbestos

Asbestos was commonly used in many types of building materials such as ceiling and floor tiles until the late 1970s. Exposure to asbestos fibers can pose potential health risks. If inhaled, asbestos fibers can cause diseases which disrupt the normal functioning of the lungs. The U.S. EPA has been regulating asbestos containing materials (ACM) defined as materials with

more than 1 percent asbestos content. The OSHA asbestos construction standards and the California Connelly Act (AB 3713) specify asbestos materials as containing 0.1 percent or more asbestos.

In January 1998, an asbestos survey was performed for the site. The survey found no evidence of friable asbestos present at the project site. However, non-friable asbestos paneling exists on the switchroom and sheds that are located on the Cargill pier (InteGreyeted Consultants, 2000).

Aboveground Storage Tank

A 10,000-gallon diesel aboveground storage tank (AST) is located in a concrete containment just west of the onsite quonset hut. The soil beneath the quonset hut was impacted by a 1991 release of diesel fuel from this AST. Soil samples were collected in this area and indicated exceedances in diesel-impact soils. A case closure letter was granted by the San Mateo County EHD and the Regional Water Quality Control Board. A condition to this closure states that any change in use of the property or development requires the Redwood City building department to notify the San Mateo County Health Services Agency for approval. Regardless of this approval, any construction activities in this area will have to incorporate special consideration and management, such as excavation and disposal of diesel-impacted soil and groundwater, if excavated. This portion of the property could be developed, leaving the soil in place underneath an access road, parking area, or an open space. This may eliminate the need to excavate and dispose of diesel-impacted subsurface soil.

Underground Storage Tank

A government records search performed by Environmental Data Resources, Inc. (EDR) revealed that the project site is listed as a leaking underground storage tank (LUST) site. According to the EDR report, miscellaneous motor fuels were released in 1988. Information regarding the exact location of this UST was not available. However, according to the San Mateo County EHD, this is a closed remediation site.⁹

REGULATORY AGENCY LISTED SITES

A search of available environmental records was conducted by Environmental Data Resources (EDR). The report meets the government records search requirements of the American Society for Testing Materials (ASTM) “Standard Practice for Environmental Site Assessments, E 1527-00.” A summary of the database search for the project site as well as for nearby surrounding sites is given below.

Project Site

A government records search performed by EDR revealed that the project site is listed as a Leaking Underground Storage Tank (LUST) site and a Cortese Site on the databases searched. The databases searched included, among others, the State of California Hazardous Waste and

⁹ Roe, Silvia, San Mateo County EHD, personal communication, April 2, 2003.

Substances List (Cortese List) and the Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS). The Cortese List is a compilation of information from various sources listing potential and confirmed hazardous waste and hazardous substance sites in California and is maintained by DTSC. CERCLIS contains general information on contaminated sites, including location, status, contaminants, and actions taken. Information in the CERCLIS database can be found on sites being assessed under the Superfund Program, hazardous waste sites, and potential hazardous waste sites. The LUST Information System contains an inventory of reported leaking underground storage tank incidents.

Nearby Sites

A review of the Cortese List, as provided by EDR, revealed six Cortese sites within approximately one mile of the project site. Additionally, nearby sites were identified in the following databases: CORRACTS, Resource Conservation and Recovery Act (RCRIS), Cal-Sites, California Hazardous Material Incident Report System (CHMIRS), Notify 65, Leaking Underground Storage Tank (LUST), Bond Expenditure Plan (BEP), and HAZNET. Table IV.I-5, below, provides a detailed list of nearby regulatory listed sites.

AIRPORTS

The San Carlos Airport is a general aviation facility located approximately 1.1 miles southwest of the project site. The project site is located within the conical surface area of the FAR Part 77 Imaginary Surfaces Height Restrictions (C/CAG of San Mateo, 1996). The project site is located in an area where building heights are restricted to an elevation of 202 feet above mean sea level.

ADOPTED EMERGENCY RESPONSE PLANS

See Section IV.J, *Public Services* for information pertaining to emergency access to the project buildings.

IMPACTS AND MITIGATION MEASURES

APPROACH TO ANALYSIS

Administrative activities at the proposed project site would use hazardous chemicals common in other office and support settings. These chemicals would include familiar materials, such as toners, paints, lubricants, kitchen and restroom cleaners, and other maintenance materials. These common consumer products would be used for the same purposes as in any office or support setting, including residences. Because the materials associated with laboratory uses are less familiar to many people, this section emphasizes health and safety concerns related to hazardous materials used in laboratory settings.

A scientific research facility cannot reasonably be expected to predict in advance every possible chemical or combination of chemicals it might conceivably use. However, estimated hazardous material use, storage, and disposal that would result from the project are estimated in the

**TABLE IV.I-5
REGULATORY LISTED SITES¹ NEAR THE PROJECT SITE**

Site Name	Site Location	Distance from Site ²	Regulatory List
Malibu Grand Prix Corp	340 Blomquist	1 mile S	Cortese
Not reported	365 Blomquist	1 mile S	CHMIRS ¹³
Willard Products	70 Chemical Way	1 mile SSW	Cal-Sites ¹¹ , BEP ¹²
Next Inc	900 Chesapeake Drive	1/4 mile SE	RCRIS-SQG
Sugen Inc	220 Penobscot Drive	1/4 mile SSW	RCRIS-LQG, HAZNET
Anergen Inc	301 Penobscot Drive	1/4 mile S	HAZNET
Corixa	301 Penobscot Drive	1/4 mile S	RCRIS-SQG
Pharmanex Inc	333 Penobscot Drive	1/4 mile S	RCRIS-SQG, HAZNET
Metlife	101 Saginaw Drive	1/4 mile SSW	RCRIS-SQG
Advanced Polymer Systems Inc.	123 Saginaw Drive	1/4 mile SSW	RCRIS-LQG ⁸ , HAZNET ⁹
City Redwood City	200 Saginaw Drive	1/4 mile S	HAZNET
GN Resound Corp	220 Saginaw Drive	1/4 mile S	HAZNET
Resound Corp	220 Saginaw Drive	1/4 mile S	RCRIS-SQG ¹⁰
Perclose	400 Saginaw Drive	1/4 mile S	HAZNET
Network Equipment Technologies	800 Saginaw Drive	1/4 mile SSE	RCRIS-SQG, HAZNET
Marina Pump Station	473 Seaport Blvd	1/2 mile ESE	LUST ⁵
Pilot Petroleum Corp.	475 Seaport Blvd	1/2 mile ENE	CORRACTS ³ , RCRIS-TSD ⁴ , Cortese ⁶ , LUST ⁷
Port of Redwood City	675 Seaport Drive	1 mile ENE	Cortese
Kaiser Cement	775 Seaport Drive	1 mile NE	Cortese
Eggli Landscaping	19 Stein AM Rhein Court	1 mile S	Cortese
Pete's Harbor	#1 Uccelli Boulevard	1/2 mile SW	Notify 65 ¹⁴ , LUST
Not reported	Intersection of Maple	1 SSW	CHMIRS

¹ As provided by EDR.

² Distances are approximate and measured in miles.

³ A list of handlers with Resource Conservation and Recovery Act (RCRA) Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

⁴ Resource Conservation and Recovery Act Database, maintained by EPA, includes selected information on sites that generate, store, treat, or dispose of hazardous substances as defined by RCRA. TSD: Treatment, Storage, or Disposal Leaking Underground Storage Tank List

⁵ Resource Conservation and Recovery Act Database – Large Quantity Generator

⁶ DTSC database that records annual hazardous waste shipments, as required by RCRA. All businesses that use and dispose of hazardous materials are entered into the HAZNET database, and each occurrence of a disposal and/or transfer of a hazardous waste is entered into the database as a record.

⁷ RCRA Database – Small Quantity Generator

⁸ This database contains both known and potential hazardous substance sites. The source is the DTSC.

⁹ Bond Expenditure Plan list. The source for this data is the California Department of Health Services.

¹⁰ The California Hazardous Material Incident Report System (CHMIRS) contains information on reported hazardous material incidents (accidental releases or spills). The CHMIRS also includes the most current California Fire Incident Reporting System (CFIRS) by reference.

¹¹ Business Emergency Plan

¹² California Hazardous Materials Incidents Report System

¹³ Proposition 65 Notification Records contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

SOURCES: Environmental Data Resources; Environmental Science Associates, 2002.

discussion that follows. These estimates represent estimated use based on Perclose's current operations of designing, manufacturing, and marketing minimally invasive devices that automate the surgical closure of blood vessels. The proposed project includes an expansion of existing Perclose facilities. The project sponsor proposes to research and develop new technologies in the specialized business area of arterial closure products at its proposed West Coast Research Center.

SIGNIFICANCE CRITERIA

Based on the following CEQA criteria, a project would generally be considered to have significant adverse impact on the environment if it would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- result in a safety hazard for people residing or working in the project area, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport.
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

HAZARDOUS MATERIALS USE, TRANSPORT, AND DISPOSAL

Impact I.1: The project would involve the transportation, use and storage of some hazardous chemicals, radioactive materials, and biohazardous materials, which could present health or safety risks for proposed project occupants and the community. (Potentially Significant)

Hazardous Materials Use, Storage, and Disposal

Hazardous materials quantities under the proposed project are shown in Tables IV.I-6, IV.I-7, and IV.I-8. These tables reference the 2001 California Fire Code, Article 8c, Tables 8001.15A, 8001.15B, 8001.15C, and 8001.15D.

In contrast to the manufacturing activity that has well-defined chemical inputs and processes, the research activity would be expected to involve a wide range of chemical compounds and products that are expected to number well into the hundreds. Among these would be a substantial number

**TABLE IV.I-6
PROJECTED HAZARDOUS WASTE GENERATION AT THE PERCLOSE BUILDING**

Location	Waste Type	Estimated Quantity
Manufacturing Operations	Spent isopropyl alcohol – laden wipes	Thirty 55-gallon drums per month
Manufacturing Operations	Spent isopropyl alcohol	650 gallons per month
Manufacturing Operations	Waste loctite adhesive	Twenty 5-gallon containers per month
Manufacturing Operations	Waste machine coolant	75 gallons per month
Failure Test & Analysis Lab	Waste bleach solution	175 gallons per month
R&D Laboratories	Spent isopropyl alcohol	Less than 20 gallons per month
R&D Laboratories	Spent loctite adhesive	Less than 15 pounds per month
Quality Test Laboratory	Spent loctite adhesive	Less than 10 pounds per month

SOURCE: Abbott Laboratories, 2003.

**TABLE IV.I-7
PROJECTED HAZARDOUS WASTE GENERATION AT THE R&D BUILDINGS**

Waste Type	Estimated Quantity
Lab packed material ¹	14,400 pounds per year
Liquid solvent	8,500 pounds per year
Solid organic intermediates	5,000 pounds per year
Sodium hydroxide debris	1,300 pounds per year
Ethidium bromide, phenol, chloroform, formaldehyde	500 pounds per year
Cytotoxic di methyl sulfoxide (DMSO) – solid	1,900 pounds per year
Cytotoxic DMSO – liquid	900 pounds per year
Oil-contaminated debris	1,200 pounds per year
Spent oil	5,600 pounds per year
Spend aerosol cans/cylinders	600 pounds per year
Sharps contaminated with spent solvents	5,400 pounds per year
Scintillation vials	350 pounds per year

¹ Includes flammable, reactive, acid, basic, toxic, peroxide-forming, and elemental mercury-containing compounds

SOURCE: Abbott Laboratories, 2003.

**TABLE IV.I-8
PROJECTED BIOHAZARDOUS WASTE GENERATION
AT THE PERCLOSE BUILDING**

Location	Waste Type	Estimated Quantity ¹
Perclose Building - Failure Test & Analysis Laboratory	Medical Devices, biohazard bags, sharps, wipes, and gloves contaminated with human blood	Four 20-gallon containers per week
Perclose Building – Microbiology Laboratory	Agar filled sample plates and strips and gloves contaminated with bacteria and media quality control organisms	Two 5-gallon containers per week
Perclose Building – R&D Laboratory	Human and animal tissue, biohazard bags, sharps, wipes, and gloves contaminated with human blood	Two 20-gallon containers per week
R&D Buildings	Varies – typically consists of absorbents, tissue cultures, and cell plates potentially contaminated with infectious agents	4,200 pounds per month
R&D Buildings	Potentially infectious sharps, including razor blades, syringes, needles, non-infectious sharps	400 pounds per month

¹ Numbers are approximate.

SOURCE: Abbott Laboratories, 2003.

of hazardous materials and some extremely hazardous materials. These materials used in R&D would be expected to include, for example:

- Halogenated solvents and non-halogenated solvents such as methylene chloride, ethyl acetate, ethanol, methanol, acetonitrile, acetone, hexane, tetrahydrofuran, ethylene dichloride, carbon tetrachloride, benzene and acetic acid. Other chemicals include ethidium bromide, phenol, chloroform and formaldehyde. Each laboratory would likely have no more than about 120 gallons, in total, of flammable materials at any one time.
- Strong acids such as hydrochloric acid and strong bases such as sodium hydroxide.
- Cell lines, tissue cultures, proteins and other biological materials.
- Compressed gases including nitrogen, carbon dioxide, argon and oxygen.
- Radioactive materials.

Typically, small quantities of these chemicals are used and stored in containers of a gallon or less in size. Some of the more hazardous materials, such as chloroform, phosgene, phosphorus

oxychloride and mercuric acetate, may also be used in quantities of less than a gallon at a time. Standard laboratory techniques include measuring weights and volumes, gently heating and cooling materials, and shaking and stirring solutions.

At the proposed project site, areas where hazardous chemicals would be stored regularly would be equipped with proper ventilation and secondary containment. Most of the flammable materials stored indoors would be kept in fire safety cabinets when not in use. Exposure to hazardous chemicals could cause acute or chronic health effects to workers and visitors.

Handling and use of these hazardous materials and the disposal of the resulting hazardous wastes would be required to follow the applicable laws and regulations, as described under in the Regulatory Setting above. The net result of good compliance would be to reduce the risks and hazards to workers, hazards to the public and hazards to the environment to levels that are considered to be acceptable, for all hazardous materials proposed.

Until use, hazardous materials would typically be stored in their original containers. As required, the hazardous materials would be stored, in each building, in locations according to compatibility and in storage enclosures (i.e. flammable material storage cabinets and biological safety cabinets) or in areas or rooms specially designed, protected, and contained for such storage, in accordance with applicable regulations. Hazardous materials would be handled and used in accordance with applicable regulations by personnel that have been trained in the handling and use of the material and that have received proper hazard-communication training. Hazardous materials reporting (i.e. California Hazardous Materials Business Planning, California Proposition 65 notification, and Emergency Planning and Community-Right-to-Know Act reporting) would be completed as required.

Hazardous Waste

As a consequence of hazardous materials use, hazardous waste is usually generated. Typically, hazardous materials would be used in the manufacturing and R&D operations. However, any hazardous material that is not consumed and can no longer be used would be designated as a hazardous waste material. While actual generation would be dependent upon operations and could be less or more than estimated, estimated breakdowns of the estimated hazardous waste generation for the Perclose and R&D buildings are provided in Table IV.I-6 and Table IV.I-7.

Biohazardous Waste

Biohazardous materials may contain infectious agents or certain recombinant DNA molecules that contribute to human disease or mortality. The potential for disease would depend on the type of infectious agent considered. The level of potential hazard is indicated by the biosafety level precautions that are recommended. A biohazardous material is one that would generally require Biosafety Level 2 or greater precautions (i.e., appropriate for agents that can cause human disease through cuts, ingestion, or mucous membrane exposure, but not serious or lethal diseases through aerosol transmission.)

Different types of biological materials would be used at the project site. The employees that would occupy the project site would be trained to work with Biosafety Level 1 or 2 materials. No Biosafety Level 3 or 4 agents or laboratories are currently proposed for the project. The use of biohazardous materials at the project site would involve small quantities of the types of biohazardous materials listed in Table IV.I-8.

Liquid biohazardous waste would be disinfected on the benchtop and disposed of in the sewer in accordance with local wastewater discharge regulations. The proposed project is estimated to generate approximately 4,200 pounds per month of solid biohazardous waste materials. This waste may vary, but typically, could consist of absorbents, tissue cultures, and cell plates potentially contaminated with infectious agents. This waste would typically be collected in plastic biohazard waste bags and pails and then autoclaved onsite. When sterilized, the autoclaved waste would then be discarded into the regular facility trash as nonhazardous waste. Onsite autoclaving processes will include pressure and steam only (Michols, 2003).

Potentially infectious sharps, including razor blades, syringes, and needles would also be collected in plastic biohazard containers. These materials would be collected and autoclaved daily. Non-infectious sharps would be collected from chemistry laboratories also. All sharps, once noninfectious, would then be shredded onsite so that the material is rendered unrecognizable and then consolidated into the general trash waste stream. An estimated 400 total pounds of sharps could be generated each month.

Some project operations would require the use of radioactive materials, as permitted through a Radioactive Materials License issued by the California Department of Health Services RHB. Most work with radioactive materials would involve handling relatively small quantities (typically less than one millicurie). Liquid waste with sufficiently low levels of radioactivity could be disposed down identified disposal sinks in accordance with radioactivity limits and permit approvals from the local wastewater treatment authority. The quantity of solid waste that would contain radioactive material would be approximately 1,900 cubic feet per year.

Solid radioactive waste (plastic lab ware, gloves, etc.) would be segregated by isotope and placed into radioactive solid drums. Waste containing isotopes with half-lives of less than or equal to 90 days would be stored onsite for decay.¹⁰ After ten-half lives, this waste would then be unpacked, surveyed, and if standards are met, disposed of off-site as non-regulated waste. Waste containing radioactive isotopes with half-lives greater than 90 days would be sent off-site for proper long-term disposal and/or processing.

Hazardous Materials and Hazardous Waste Transport

All hazardous materials would be transported to the site in accordance with applicable hazardous materials shipping regulations. Chemicals, biohazardous materials, and other packages for laboratories would be delivered directly to users. Radioactive materials would also be delivered directly to users. Radioactive material shipments would be checked for damage, external and

¹⁰ The quantity of radioactivity decreases by one-half over the interval of time called a half-life. Decay over the interval of half-lives reduces the amount of radioactivity to less than 1/1000 of the original amount.

internal contamination, and purchaser authorization for the type and amount of material in the package. Chemical, radioactive, and biohazardous waste would be picked up on a regular basis (typically at least every six weeks) and transported by a properly licensed commercial waste transporter and disposed of or recycled at a properly licensed and permitted off-site disposal and/or recycling facility.

Compliance with all applicable regulatory requirements would minimize hazards to workers, visitors, the public, and the environment. Conformance with all applicable laws and regulations would be part of the proposed project. Tables IV.I-9 and IV.I-10 summarize controls that shall be implemented to minimize hazards to workers, visitors, the public, and the environment. To some extent, the effectiveness of health and safety programs depends on how conscientiously all of the individuals involved in the programs (particularly the laboratory occupants) actually implement them. Evaluation of Perclose's safety and regulatory compliance records (summarized previously in this section) that have not resulted in any recorded violations, indicates that the project applicant makes a good faith effort to implement required safety measures. When deficiencies are noted, the project applicant takes appropriate steps to correct them. For this reason, implementation of appropriate health and safety controls as part of the project is reasonably foreseeable.

With these controls in place and implemented, the project would not involve the use, production, or disposal of materials in a manner that poses a hazard to people, or to animal or plant populations; create an undue risk of upset related to human or environmental health or safety; or expose employees to working situations that exceed accepted worker health standards.

In order to be consistent with Redwood City Strategic General Plan objectives and policies (e.g., Objective 2) and the Business Plan Law, this EIR includes the following measure which would ensure that impacts related to the management, handling, transportation, storage and emergency response related to hazardous materials remain less than significant.

Mitigation Measure I.1: The project sponsor shall include area evacuation and business evacuation plans as a part of its business plan, subject to review by both the County of San Mateo Health Services Agency and the Redwood City Fire Department. Additionally, the project sponsor, in conjunction with the Redwood City Fire Department, shall conduct onsite hazardous materials training and orientation to hazardous conditions as needed, or at least every 18 months. (Identified by this EIR)

Significance after Mitigation: Less than Significant.

Impact I.2: The proposed project would emit some toxic air contaminants. (Less than Significant)

Not all hazardous materials result in TACs. Some release of TAC emissions to the atmosphere also would occur as these hazardous materials are being used for research, as well as during

**TABLE IV.I-9
EXPOSURE PATHWAYS AND CONTROLS FOR WORKERS**

Exposure Pathway	Examples of Primary Control Measures to be Implemented, as Appropriate
Inhalation (breathing a hazardous substance)	<ul style="list-style-type: none"> • Working with volatile materials in fume hoods¹ • Working with potentially aerosol suspended biohazardous materials in biosafety cabinets² • Keeping containers closed when not in use • Wearing face masks or respirators, as necessary
Contact (absorbing a hazardous substance through the skin or eyes)	<ul style="list-style-type: none"> • Wearing protective clothing and shoes • Wearing eye protection (glasses or goggles) • Wearing gloves • Washing hands and work areas • Working with radioactive materials behind shields
Ingestion (swallowing a hazardous substance)	<ul style="list-style-type: none"> • Not eating or drinking in laboratories • Not storing food in laboratory refrigerators used for hazardous materials • Not smoking in laboratories • Not drawing material into glass tubes or pipettes by mouth • Washing hands and work areas
Injection (Puncturing or cutting the skin with a contaminated object)	<ul style="list-style-type: none"> • Participating in awareness training • Keeping sharps in puncture-resistant containers
Accidents	<ul style="list-style-type: none"> • Participating in emergency response training • Maintaining emergency equipment (e.g., safety showers, emergency eye washes, first aid kits, neutralizing substances for corrosive materials) • Storing flammable materials in fire-rated cabinets • Providing secondary containment for hazardous materials that are not in use • Calling Redwood City Department and Hazardous Materials Emergency Response Team, if necessary

¹ Fume hoods are cabinets with front-opening (usually sliding) glass doors connected to overhead exhaust fans that draw air from the cabinet and expel it into the atmosphere through rooftop stacks.

² Biosafety cabinets look similar to fume hoods. They filter aerosols and remove particles from the air, but do not necessarily exhaust the filtered air to the outdoors.

SOURCE: Environmental Science Associates, 2003.

development and manufacturing activities. Because TAC emissions can result in potential adverse effects on human health, the BAAQMD uses its permitting process to limit the human health risks that may be caused by a new or modified source, such as the project, to acceptable levels.

**TABLE IV.I-10
EXPOSURE PATHWAYS AND CONTROLS FOR VISITORS,
THE PUBLIC, AND THE ENVIRONMENT**

Exposure Pathway	Examples of Primary Control Measures to be Implemented, as Appropriate
Air Emissions	<ul style="list-style-type: none"> • Using fume hood ventilation system to dilute and subsequently disperse emissions to the atmosphere¹
Transport To and From the Site	<ul style="list-style-type: none"> • Following packaging requirements specified by the U.S. Department of Transportation, the U.S. Postal Service, and the California Department of Health Services (Radiologic Health Branch and Medical Waste Program) • Identifying container contents with appropriate labels • Using licensed hazardous waste haulers • Documenting hazardous waste shipments
Inadvertent Sewer Disposal	<ul style="list-style-type: none"> • Training workers • Collecting hazardous waste for appropriate disposal • Monitoring wastewater from the site • Diluting and treating sewage from the site
Inadvertent Disposal with Solid Waste	<ul style="list-style-type: none"> • Training laboratory workers and custodians • Separating wastes • Collecting hazardous waste for appropriate disposal • Labeling trash cans
Direct and Indirect Contact	<ul style="list-style-type: none"> • Identifying container contents with appropriate labels • Training workers • Implementing standard laboratory hygiene practices (e.g., wearing protective clothing and gloves, leaving protective clothing at work, and washing hands and work areas) • Implementing medical surveillance programs to monitor the health of those who work with certain biohazardous materials. • Monitoring the exposure of those who work with radioactive materials
Waste Disposal	<ul style="list-style-type: none"> • Following federal and state hazardous waste disposal regulations and procedures, including hazardous waste manifest documentation
Other Accidents	<ul style="list-style-type: none"> • Providing emergency response training • Maintaining emergency equipment (e.g., safety showers, emergency eye washes, first aid kits, neutralizing substances for corrosive materials) • Calling Redwood City Fire Department and Hazardous Materials Emergency Response Team, if necessary

¹ Fume hoods are cabinets with front-opening (usually sliding) glass doors connected to overhead exhaust fans that draw air from the cabinet and expel it into the atmosphere through rooftop stacks.

SOURCE: Environmental Science Associates, 2003.

Some of the hazardous materials proposed to be used—namely benzene, carbon tetrachloride, chloroform, formaldehyde and methylene chloride—are proposed in quantities that exceed the trigger levels established by the BAAQMD under Regulation 2, Rule 1, in Table 2-1-316, Toxic Air Contaminant Trigger Levels. This does not necessarily mean that the project's TAC emissions would fail to satisfy the BAAQMD criteria, but further analysis would be required to make this determination.

Because TAC emissions can result in potential adverse effects on human health, whether such effects are due to acute or chronic exposures, the BAAQMD uses its review and permitting process to limit the human health risks that may be caused by TACs emitted by a new or modified source, such as the project.

The BAAQMD review of a project's new or modified source application includes: 1) the identification of all emitted TACs, to the extent necessary to determine whether or not they may pose a health risk; 2) the calculation of annual TAC emission rates; and, 3) the evaluation of the adverse health effects that could result from those emissions. Approval of the project would require that the project meet the District's health risk criteria. Although the design of the project and its ventilation system for the collection and exhaust of TACs from the buildings laboratories has not been completed, good design practices are known to provide the ability to gather, dilute and direct the laboratory exhausts so that TAC emissions should not pose health risks to onsite workers or the public. Thus, given the nature of the proposed project and the apparent magnitude and type of chemical use anticipated, it is expected that the project should be capable of meeting the BAAQMD health risk criteria.

During operations, TAC emissions would occur from diesel vehicles servicing the site (buses and delivery trucks) as well as from stationary sources such as laboratory fume hoods. Stationary sources of TACs are regulated by the BAAQMD, but mobile sources are not.

Mitigation: None required.

HAZARDOUS MATERIAL RELEASE

Impact I.3: The proposed project could increase the risk of spillage and/or accidental release of hazardous substances. (Potentially Significant)

The proposed project would increase the risk of spillage and/or accidental release of hazardous substances. Several plans are in place to address these issues, including the California Office of Emergency Services administers the California Emergency Response Plan, which coordinates emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials releases is one part of this plan. As required under the Hazardous Materials Release Response Inventory Law of 1985, the project sponsor must submit a hazardous material business plan. The hazardous materials business plan shall include area and business evacuation plans. Compliance with applicable regulations would ensure protection

against hazardous materials spillage and effective containment and cleanup facilities and procedures for accidental spills. The project sponsor would be required to comply with all federal and state laws regulating hazardous materials. Additionally, the project sponsor would be required to implement Mitigation Measure I.1 to include area evacuation and business evacuation plans as a part of its business plan and to conduct onsite hazardous materials training and orientation to hazardous conditions in conjunction with the RCFD as needed, or at least every 18 months. With mitigation included as part of this EIR, impacts associated with the release of hazardous materials would be considered less than significant.

Mitigation Measure I.3: Implement Mitigation Measure I.1. (Identified by this EIR)

Significance after Mitigation: Less than Significant.

LISTED SITES

Impact I.4: The project site is listed as a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, has potential to create a significant hazard to the public or the environment. (Less than Significant)

A government records search performed by EDR revealed that the project site is listed as LUST site. According to the EDR report, miscellaneous motor fuels were released in 1988. Information regarding the exact location of this UST was not available. However, according to the San Mateo County EHD, this is a closed remediation site, so the risk to the public or the environment has been reduced to acceptable levels.

Mitigation: None required.

AIRPORT

Impact I.5: The proposed project would introduce new development and employment population within the restricted height area of the San Carlos Airport planning area. (Less than Significant)

The City of Redwood City does not have an airport overlay zone to address airport/land use compatibility issues. However, the Safety Element of the Redwood City Strategic General Plan does contain Policy S-12, which states, "Regulate land uses surrounding airports to assure airport safety. Measures may include restrictions on permitted land uses and development criteria."

Any proposed new construction or expansion of existing structures that would penetrate any of the FAR Part 77 imaginary horizontal and sloping surfaces for San Carlos Airport would be deemed incompatible uses unless determined otherwise by the FAA. The proposed project would

not be located in the approach path of the San Carlos Airport, nor would any proposed building penetrate FAA-restricted airspace. Therefore, the proposed project would not obstruct the navigable airspace as designated by the FAR Part 77 Imaginary Surfaces Height Restrictions, for San Carlos Airport.

Mitigation: None required.

Impact I.6: As a result of the project, employees and visitors could be exposed to residual hazardous materials that exist on certain structural and building components at certain locations at the project site. (Less than Significant)

Polychlorinated Biphenyls (PCBs)

The transformer located on the southeastern side of the subject property was installed by PG&E in the 1980's and therefore, based on its age, does not likely contain PCBs. The three units near the salt wash equipment are original equipment and were tested for PCBs in 1996. Results of the testing indicated that there were no detectable PCBs in one transformer and PCBs were present at 2 ppm and 3 ppm in the remaining two transformers. Additionally, in 2000, four shallow subsurface soil samples and one wipe sample were collected from the area around the transformers and analyzed for PCBs. No PCBs were detected in any of the samples (InteGreyeted Consultants, 2000).

Asbestos

In January 1998, an asbestos survey was performed for the site. The survey found no evidence of friable asbestos present at the project site. However, non-friable asbestos paneling exists on the switchroom and sheds that are located on the Cargill Pier (InteGreyeted Consultants, 2000).

Aboveground Storage Tank

The soil beneath the 10,000-gallon diesel aboveground storage tank (AST) located just west of the quonset hut was collected and tested. This area corresponds to the approximate location of the landscaped area between the proposed Marine Science Institute and the Port of Redwood City day-use parking lot. The soil in this area exceeded San Mateo County's screening level of 100 mg/kg for diesel-impacted soils. However, the San Mateo County EHD and the Regional Water Quality Control Board granted closure on the property. The project's Phase II report indicates that if the portion of the project site would be developed with buildings, any construction activities in this area would have to incorporate special consideration and management, such as excavation and disposal of diesel-impacted soil and groundwater, if excavated.

The subsurface impacted soil, based on its chemical constituents (diesel fuel) and soil type (clay), depth at which this material was discovered, case closure by San Mateo County, and the proposed future uses on the site (office, R&D, manufacturing, Marine Science Institute and possibly day

care in the project's Phase 3 building) does not represent an immediate threat to human health or the environment.

Grading operations during construction may expose construction workers to these soils, but considering chemical composition of the soil consisting of aged-diesel fuel, worker exposure during construction would be minimal. In light of the planned future uses on the site and the location of these uses with respect to the known area of contaminated soil, it is likely that the diesel-impacted soil would be covered with clean, imported topsoil, base material, or asphalt. Therefore, long-term exposure of residual diesel concentrations to the environment would be eliminated. However, if the applicant opts to remove the diesel-impacted soil based on recommendations by the San Mateo County Environmental Health Department, any source of residual diesel contamination would also be eliminated.

Underground Storage Tank

The project site is listed as a LUST site. However, according to the San Mateo County EHD, this is a closed and remediated site.

Mitigation: None required.

CUMULATIVE IMPACTS

Impact I.7: Hazards at the project site could contribute to cumulative hazards in the vicinity of the project. (Less than Significant)

Cumulative development anticipated to occur along with the project is summarized in Chapter II, Summary. Cumulative health and safety effects could occur if activities at the project site and other existing and proposed development, together, could increase risks in the neighborhood. However, most routine hazardous materials activities at the project site would be located indoors. Any indoor health or safety effects of routine hazardous materials use would be limited to the specific individuals using the materials and anyone in the immediate vicinity of the use. No interaction would occur between these routine activities and similar activities at different sites.

Cumulative health and safety impacts could occur if project-related outdoor or off-site hazards were to interact or combine with those of other existing and proposed development. This could occur through limited mechanisms: air emissions, transport of hazardous materials and waste to or from the project site, inadvertent release of hazardous materials to the sewer or non-hazardous waste landfill, and potential accidents that require hazardous materials emergency response capabilities. Air emissions are addressed in Section IV.E, Air Quality. The other mechanisms for cumulative off-site effects are discussed below.

Because off-site hazardous materials shipments by the proposed project could involve the same roads used by new development in the area, the project, together with other new development,

could contribute to cumulative increases in the amount of hazardous material transported to and from the project site and the surrounding community. Hazardous materials are transported by common carriers, such as United Parcel Service and Federal Express, which would often ship small containers of hazardous materials for delivery along their routes whether or not the project is approved. Cumulative increases in the transportation of hazardous materials and wastes would cause a less than significant impact because the probability of such accidents is relatively low, and the use of legally required packaging minimizes the consequences of potential accidents.

The proposed project would contribute to cumulative increases in the demand for hazardous materials emergency response capabilities in Redwood City. Any growth involving increased hazardous materials use has the potential to increase the demand for emergency response capabilities in the area. However, first response capabilities and hazardous materials emergency response capabilities are currently available and sufficient for all cumulative projects. Furthermore, substantive hazardous materials accidents at the project site or vicinity are expected to be rare, and when such incidents would occur, only one such incident would be expected at any one time (except during major catastrophes, such as major earthquakes, as discussed in Section IV.B, Geology, Soils and Seismic Safety). Due to the controls in place at the site, no off-site effects would be expected. Furthermore, additional hazardous materials response services could be available through other jurisdictions, and private hazardous materials emergency response agencies could be used. Therefore, this cumulative impact would be less than significant.

Mitigation: None required.

REFERENCES – Hazards and Hazardous Materials

(The references cited below are available at the Redwood City Planning Services Department, 1017 Middlefield Road, Redwood City, California, unless specified otherwise below.)

City/County Association of Governments of San Mateo County, *San Mateo County Comprehensive Airport Land Use Plan*, December 1996.

City of Redwood, *City Redwood City Strategic General Plan*, 1990.

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InteGreyted Consultants, *Phase II Site Investigation Report Cargill Salt – Redwood City Salt Stacking Facility Chesapeake Drive and Discovery Parkway, Redwood City, CA 94063*, December 2000.

IV. ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

I. HAZARDS AND HAZARDOUS MATERIALS

Michols, Curtis, Abbott Laboratories' Corporate Environmental Services Coordinator, personal communication, July 21, 2003

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