

DIGITAL EQUIPMENT CORPORATION
SUMMARY OF ENVIRONMENTAL RISKS

CONFIDENTIAL

ANDOVER, MA

<u>CONDITION</u>	<u>RISK SCENARIO</u>	<u>FINANCIAL CONSEQUENCES</u>	<u>LIKELIHOOD</u>	<u>RECOMMENDATIONS</u>
1. 9000 gallon above ground liquid nitrogen storage tank is located approximately 50 feet from an air intake, 4 feet off the ground, leading to the boiler room (Room 131).	A tank rupture leading to instantaneous release of its entire contents would result in a vapor cloud which could be drawn into the air intake and present an asphyxiant hazard to employees and other persons in the building.	Moderate-High	Low	<p>1) Establish a procedure calling for immediate evacuation of the building in the event of a nitrogen tank rupture.</p> <p>2) Provide for immediate shutoff of the building air intake system in this situation, either automatically through an oxygen monitor placed in the Room 131 air intake, or manually as part of a formal procedure.</p>
2. The above ground 275 gallon diesel fuel storage tank for the firewater pump lacks secondary containment, and a storm drain is located approximately 25 feet from it.	Diesel oil may spill and contaminate surface water and soil, resulting in cleanup costs.	Low	Low	<p>3) In conjunction with the tank owner, consider alternative locations for the existing tank at a safe distance from air intakes.</p> <p>4) See 3) above for proposed new 500 gallon liquid nitrogen tank.</p> <p>1) Design and build an appropriate secondary containment structure.</p>

- RECOMMENDATIONS
- 1) Improve the housekeeping and maintain orderly storage; separate incompatible materials in the Wet Storage area.
 - 2) Inspect the hazardous waste storage area on a weekly basis, making sure that all deterioration, incompatible chemical storage, and spills are documented and that appropriate corrective actions are taken.

Moderate

**

Generators of hazardous waste are required to separate product from waste as well as to separate incompatible wastes. On at least a weekly basis, generators are required to inspect their storage area for leaking drums and to document the findings of the inspection. Failure to comply with these obligations can result in potential reactions leading to accidental environmental releases, possible personal injury, and/or in a fine or penalty.

3. The Wet Storage area contains drums of new chemicals and hazardous and non-hazardous wastes, with no effective separation of incompatible materials. No formal inspections of the hazardous waste storage area are conducted or documented.

- 1) Inspect all hazardous waste containers stored on-site to ensure that all wastes approaching the 90 day limit are prepared for shipment for disposal and are shipped out within the 90 day limit.

Moderate

**

Large quantity generators of hazardous waste are allowed to store hazardous waste on-site for a maximum of 90 days. Failure to meet this storage time limit can result in a fine or penalty.

4. Hazardous waste is being stored on-site for longer than 90 days.

* NOTE: Financial Consequence

		<u>Likelihood</u>
1. Low	= \$100,000 - \$500,000	1. Low = 10^{-7} - 10^{-4}
2. Moderate	= \$500,000 - \$1.5 million	2. Moderate = 10^{-4} - 10^{-2}
3. High	= > \$1.5 million	3. High = 10^{-2} - 1

** Collectively, items 1-6 could exceed \$1.5 million.
*** Collectively, items 28-32 could exceed \$100,000.

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HUDSON, MA

CONDITION RISK SCENARIO FINANCIAL CONSEQUENCES

LIKELIHOOD RECOMMENDATIONS

<p>1. Sludge from the waste water pretreatment plant (consisting principally of Calcium Fluoride) is disposed as a hazardous waste, although it is not characterized as hazardous waste under the Resource Conservation and Recovery Act. This practice is in part a carry-over from a prior operating period when heavy metals were precipitated in the wastewater pretreatment plant, and the sludge was classified as hazardous waste.</p>	<p>If the commercial hazardous waste disposal site now receiving the sludge were to ultimately become a Superfund site, then the presence of Digital's sludge would result in their being a potentially responsible party, even though the sludge is non-hazardous.</p>	<p>Moderate</p>	<p>Low</p>	<p>1) Re-evaluate the purpose of disposing of the sludge as hazardous waste.</p> <p>2) Investigate alternate disposal methods for the sludge as non-hazardous material, including possible shipment to the Hudson municipal waste treatment plant for introduction just prior to sludge filtration.</p>
<p>2. Extremely hazardous gases (e.g., arsine, phosphine, boron trichloride, chlorine) are stored and used in cylinder and lecture bottle quantities extensively throughout the Hudson facility.</p>	<p>Although the storage and use of these gases follows good industry practice, there are some circumstances that could result in the release of these materials into the environment, namely:</p> <ul style="list-style-type: none"> - fire - cylinder failure - scrubber failure - cabinet system failure. 	<p>Moderate-High Low-Moderate Low-Moderate Low-Moderate</p>	<p>Low-Moderate Low Low Low</p>	<p>1) Continue with the plan to model the dispersion of releases in order to evaluate potential toxic concentrations at down-wind receptors, such as day-care centers.</p> <p>2) Conduct Process Risk Analyses on old fabrication systems in order to determine if they pose unacceptable risks because they a) have been modified without due care or b) were built before better design standards were available.</p>

*(Note: Silane is also an extremely hazardous gas, but its principal hazard is fire and explosion, not toxicity. The risk of fire and explosion was not included in the scope of this assessment and thus hazards related to silane are not included in this summary.)

DIGITAL EQUIPMENT CORPORATION
SUMMARY OF ENVIRONMENTAL RISKS

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HUDSON, MA (continued)

FINANCIAL
CONSEQUENCES

CONDITION	RISK SCENARIO	LIKELIHOOD	RECOMMENDATIONS
3. Wastewater is discharged to the Hudson municipal waste treatment plant at about twice the rate allowed in Digital's permit.	Digital could be fined for discharges exceeding the permit level and for making facility modifications without applying for a new permit.	Low	1) Accelerate the pace of working with the EPA and the municipal waste treatment authority to secure a new permit.
4. Truckload quantities of hydrochloric acid are unloaded at the Tech Shop.	A spill of liquid hydrochloric acid could result in a release of toxic HCl fumes into the atmosphere, posing a health threat to employees and neighbors.	Low-Moderate	1) Modify the emergency response manual of the Emergency Response Team to include instructions for suppressing HCl vapors (e.g., by using foam).
5. Some extremely hazardous materials (i.e., arsine, phosphine, and boron trichloride) were not reported to the Fire Chief, et al, on October 13, 1987, because they were judged not to be present in sufficient inventory amounts to trigger the reporting requirements.	If any of these substances is released into the environment and Digital reports the release to the Local Emergency Director, then the Company could be accused of deliberately failing to share important hazard information with the community. This could compromise Digital's image and its relationship with Hudson.	Moderate (if release occurs)	1) Re-evaluate the decision not to report the presence of these materials at the Hudson facility. Consider amending the 10-17-87 submission.

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DIGITAL EQUIPMENT CORPORATION
SUMMARY OF ENVIRONMENTAL RISKS

HUDSON, MA (continued)

CONDITION	RISK SCENARIO	FINANCIAL CONSEQUENCES	LIKELIHOOD	RECOMMENDATIONS
6. Conditions of potential non-compliance with requirements for managing hazardous waste under the Resource Conservation and Recovery Act (RCRA) such as improper labeling, storage of waste over 90 days without a permit, improper satellite storage, inspection frequency, training and out-of-date contingency plan, were observed at the facility.	None of the observed conditions represents a serious environmental threat, but collectively they could lead to a fine for non-compliance with RCRA.	Low	Low	1) Provide additional training to raise the awareness and knowledge of facility personnel in proper hazardous waste management practices. 2) Replace the hazardous waste technician.

ANALYSIS OF ENVIRONMENTAL RISK
 Digital Equipment Corporation
 Greenville, SC Plant

CONFIDENTIAL

High					High
Moderate					Moderate
Low					Low
					High

Likelihood of Risk Scenario

5,6

① ②
 ③ ④

Financial Consequence of Risk Scenario

I. LIKELIHOOD

1. Low = 10^{-7} to 10^{-4}
2. Moderate = 10^{-4} to 10^{-2}
3. High = 10^{-2} to 1

II. FINANCIAL CONSEQUENCE

1. Low = \$100,000 to \$500,000.
2. Moderate = \$500,000 to \$1.5 million
3. High = > \$1.5 million

III. SYMBOLS

1. (#) = Individual Impact of Scenario
2. [#, #] = Collective Impact of Scenarios

DIGITAL EQUIPMENT CORPORATION
SUMMARY OF ENVIRONMENTAL RISKS

GREENVILLE, SC PLANT

CONFIDENTIAL

<u>FINANCIAL CONDITION</u>	<u>RISK SCENARIO</u>	<u>CONSEQUENCES</u>	<u>LIKELIHOOD</u>	<u>RECOMMENDATIONS</u>
1. Hazardous chemicals which, if spilled, could release acid mist or toxic vapors are stored in bulk quantities on-site.	Should a tank rupture or otherwise fail, the quantity of acid mist or toxic vapor released would be a function of the amount spilled, which, in turn, is a function of the amount of the chemical stored on-site. Major release could result in potential injury to plant personnel and potential exposure of downwind neighbors less than 1/4 mile away.	Moderate	Low	1) Limit inventory of such bulk hazardous chemicals stored on-site at any one time to only those quantities needed to maintain production.
2. Above ground tanks containing incompatible materials share common secondary containment areas within the tank farm.	A multiple tank spill or sequential spills occurring close in time within the same secondary containment area could release toxic fumes (ammonia, NO _x , acid mist) resulting in potential injury to nearby plant personnel and potential exposure of downwind neighbors less than 1/4 mile away.	Moderate	Low	1) Rearrange the storage of bulk chemicals in the tank farm so that only compatible chemicals have the same containment area.

DIGITAL EQUIPMENT CORPORATION
SUMMARY OF ENVIRONMENTAL RISKS

GREENVILLE, SC PLANT (continued)

CONFIDENTIAL

CONDITION	RISK SCENARIO	FINANCIAL CONSEQUENCES	LIKELIHOOD	RECOMMENDATIONS
3. The two secondary containment areas within the Tank Farms drain to a common sump.	One tank spill within each secondary containment area, occurring simultaneously or close in time, could also release the same toxic fumes listed above, resulting in similar risks to plant personnel and nearby neighbors.	Moderate	Low	1) Separate the drainage of the two containment areas in the tank farm.
4. Integrity testing of three 40,000 gallon underground fuel oil storage tanks (fiberglass) has never been performed.	These tanks may be leaking and contaminating soil and groundwater, resulting in cleanup costs.	Moderate	Low (currently given age and material of construction of the tanks)	1) <u>Primary</u> Perform routine integrity testing on the tanks, while continuing current inventory control checks. 2) <u>Alternative</u> Implement a removal and replacement program for underground tanks.

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SUMMARY OF ENVIRONMENTAL RISKS

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GREENVILLE, SC PLANT (continued)

CONDITION	RISK SCENARIO	FINANCIAL CONSEQUENCES	LIKELIHOOD	RECOMMENDATIONS
5. The hazardous waste storage area contains drums of new chemicals and hazardous and non-hazardous waste, with no effective separation of incompatible materials. No formal inspections of the hazardous waste storage area are conducted or documented.	Generators of hazardous waste are required to separate product from waste as well as to separate incompatible wastes. On at least a weekly basis, generators are required to inspect their storage area for leaking drums and to document the findings of the inspection. Failure to comply with these obligations can result in potential reactions leading to accidental environmental releases, possible personal injury, and/or in a fine or penalty.	**	Moderate	<p>1) Improve the housekeeping and maintain orderly storage; separate incompatible materials. Additional storage space is also needed.</p> <p>2) Inspect the storage area on a weekly basis, making sure that all deterioration, incompatible chemical storage, and spills are documented and that appropriate corrective actions are taken.</p>
6. Hazardous waste drums are being stored on-site longer than 90 days.	Large quantity generators of hazardous waste are allowed to store hazardous waste on-site for a maximum of 90 days. Failure to meet this storage time limit can result in a fine or penalty.	**	Moderate	<p>1) Inspect all hazardous waste containers stored on-site to ensure that all wastes approaching the 90 day limit are prepared for shipment for disposal off-site and are shipped out within the 90 day limit.</p>

* NOTE: Financial Consequence

	Likelihood
1. Low = \$100,000 - \$500,000	1. Low = 10 ⁻⁷ - 10 ⁻⁴
2. Moderate = \$500,000 - \$1.5 million	2. Moderate = 10 ⁻⁴ - 10 ⁻²
3. High = > \$1.5 million	3. High = 10 ⁻² - 1

** Collectively, items 1-6 could exceed \$1.5 million.