

Basis for Human Exposures Controlled Determination  
RCRIS Code CA725  
at  
Hampshire Chemical Corporation  
EPA ID No. NHD048724173  
Nashua, New Hampshire

The purpose of this report is to provide the basis for determining that the Hampshire Chemical Corporation facility can be recorded with the status code of YE under the RCRIS Event Code of 725 - Human Exposures Controlled.

The July 29, 1994 RCRIS Corrective Action Environmental Indicator Event Codes CA725 and CA750 memo from EPA's Office of Solid Waste specifies that the event code for Human Exposures Controlled, CA725, may be counted when one or both of the following conditions are met:

1. Remedial measures have been implemented with the result that all maximum contaminant concentrations detected or reasonably suspected are less than or equal to their respective action levels. In this case, the action levels are the Ambient Groundwater Quality Standards and the Risk Characterization and management Policy Method 1 Soil Standards, as established by the New Hampshire Department of Environmental Services (Department), or
2. There are no unacceptable human exposures to any contaminant concentration above action levels that has been detected or is reasonably suspected based on current contaminant concentrations and current site conditions. Action has been taken or site conditions are such that unacceptable threats to human health from actual exposure to the contamination are not plausible based on current uses of the site.

Based on a review of available information contained in Department files, and subject to the limitations cited below, the Department has determined that there are no unacceptable risks to humans due to releases of regulated contaminants at the facility. This determination is based on the conclusions described in number 1 below and supplemented by additional facts in numbers 2 and 3 below and the references listed in number 4 below.

## 1. Conclusion

There are no unacceptable human exposures to any contaminant concentration above action levels that has been detected or is reasonably suspected based on current site conditions. A public health risk assessment was performed to determine if any contaminants posed unacceptable risks to public health under current and hypothetical exposure scenarios. No unacceptable public health threats were determined to exist under current exposure scenarios and site conditions. According to the public health risk assessment, potentially unacceptable risks were determined to exist under the hypothetical exposure scenario in which a utility worker would be required to enter an excavation adjacent to the Spit Brook Culvert to perform repairs to the culvert. Under this potential exposure scenario, a utility worker could be exposed to elevated levels of ammonia and sulfide vapors. These vapors could be released from groundwater to the ambient air if the excavation encountered groundwater.

## 2. Release Summary

Groundwater: ammonia, arsenic, base neutral extractable compounds (BNs), cadmium, chromium, copper, cyanide, sulfide, lead, nickel, nitrate, nitrite, potassium, sulfate, and volatile organic compounds (VOCs) are the compounds of potential concern. Several volatile organic compounds have been detected in groundwater including acetone, benzene, carbon disulfide, naphthalene, and vinyl chloride. For BNs, only isophorone has been detected. Ammonia and sulfide are not included as groundwater contaminants regulated in the Department's Groundwater Protection Rules. All other contaminants listed above are included as groundwater contaminants under these same rules and were detected at levels above their respective Ambient Groundwater Quality Standards.

Soil: ammonia, barium, chromium, copper, cyanide compounds, formaldehyde, lead, nitrite, nitrate, sulfide, volatile organic compounds, and zinc are the compounds of potential concern. Ammonia, formaldehyde and sulfide are not included as contaminants regulated in the soil standards contained in the Department's Risk Characterization and Management Policy.

In October and November 1992, while conducting test pitting activities in the former North Lagoon area, over 100 buried drums were excavated from this area. These drums were then overpacked and disposed of off-site. As part of a Voluntary Interim Measure (VIM), Hampshire undertook the excavation and removal of an additional 261 drums from the former North Lagoon area during the period from November 1995 to February 1996. All drums, containerized wastes and uncontainerized wastes removed during the drum excavation activities were transported off-site and disposed of according to the waste characteristics of the materials.

### 3. Relevant Conditions and Assumptions

**Groundwater:** It has not been possible to determine if groundwater contamination has migrated beyond Hampshire's downgradient property line because the downgradient property owner, Guilford Transportation Industries, has not allowed Hampshire Chemical to install groundwater monitoring wells on property immediately downgradient of Hampshire Chemical. Guilford's property consists of a narrow corridor of land between the Hampshire site and the Merrimack River. This property is used by Guilford's subsidiary, the Boston and Maine Railroad, for rail transportation purposes only. Therefore, off-site human exposures to contaminated groundwater are not plausible.

**Surface Water:** There are two surface water bodies at the site, Spit Brook and the Merrimack River. Extensive sampling of the Merrimack River and Spit Brook have shown that discharges of groundwater from the site are not causing violations of surface water quality standards.

**Sediment:** An ecological risk assessment was performed to assess potential risks for ecological communities in the Merrimack River. This assessment identified no significant current or future risks to ecological receptors downgradient of the site.

**Air:** Other than hypothetical exposures to ammonia and sulfide vapors moving from groundwater to the air within an excavation adjacent to the Spit Brook culvert, there are no source areas from which air emissions would be expected.

**Biota:** There is little potential for risk to human health through the food chain because nearly the entire site is used for chemical manufacturing and associated purposes.

On-site workers use water supplied by the public water system for Nashua. Groundwater at the site is not used for any consumptive or manufacturing processes.

Exposure of trespassers, on-site workers or visitors to contamination in soils is implausible due to drum removal and remediation of the North Lagoon drum disposal area. The entire site is surrounded by fencing and access is controlled by a single point of entry that includes 24 hour manned security.

### 4. References

A. Corrective Measures Study Report, Hampshire Chemical Corporation, Nashua, N.H., August 1997, prepared by GZA GeoEnvironmental;

B. Voluntary Interim Measure Report, Hampshire Chemical Corporation, Nashua, N.H., June 1996, prepared by GZA GeoEnvironmental;

Hampshire Chemical Corporation, RCRIS Code CA725  
Nashua, New Hampshire  
EPA ID No. NHD048724173  
September 28, 1998  
Page 4

C. Supplemental Phase II Ecological Risk Assessment, Hampshire Chemical Corporation, Nashua, N.H., January 1996, prepared by GZA GeoEnvironmental;

D. Phase II RCRA Facility Investigation Report, Hampshire Chemical Corporation, Nashua, N.H., April 1995, prepared by GZA GeoEnvironmental; and

E. Phase I Interim RCRA Facility Investigation Report, Hampshire Chemical Corporation, Nashua, N.H., November 1993, prepared by GZA GeoEnvironmental.

5. Sign Off

Prepared by James B. Zeppieri Date September 29, 1998

James B. Zeppieri, Project Manager  
Hazardous Waste Remediation Bureau  
New Hampshire Department of Environmental Services

Approved by John M. Regan Date 10/1/98

John M. Regan, Supervisor  
Hazardous Waste Remediation Bureau  
New Hampshire Department of Environmental Services