

**SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES**

**STANDARD OPERATING PROCEDURE  
FOR THE ADMINISTRATION OF ARTICLE 12  
OF THE SUFFOLK COUNTY SANITARY CODE**

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**ARTICLE 12 ~~ SOP NO.9-95**

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***"PUMPOUT AND SOIL CLEANUP CRITERIA"***

Revised August, 2010  
Effective January 1, 2011

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES  
ARTICLE 12 ~~ SOP NO. 9-95  
PUMPOUT AND SOIL CLEANUP CRITERIA

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## STATEMENT OF PURPOSE

Article 12 of the Suffolk County Sanitary Code, requires the owner, operator or any other person in possession or control of an industrial facility to report to the Department of Health Services (the Department) any unauthorized discharge, leak or spill of toxic or hazardous material within two hours of knowledge of that discharge, leak or spill. Knowledge of a spill includes information generated during Phase I and Phase II Environmental Assessments, such as results from groundwater and soil sampling. In addition, Article 12 requires the owner, or any other person in possession or control of the source of the discharge, and/or the owner of the property onto which the discharge has occurred, to immediately cease the discharge and to reclaim, recover and dispose of the discharged material and to restore the environment to the condition that existed prior to the discharge.

Since it is not always possible to achieve predischage conditions, this document was generated to provide guidance when evaluating the potential impact of a discharge on the environment and to provide assistance when determining if, and to what extent, contaminated liquids and/or solids must be removed from sanitary systems, storm drains, or other locations at a facility. It was generated to be applicable to most situations; however, the Department reserves the right to apply additional requirements when warranted by conditions encountered at a particular site.

This document is not meant to represent approval by the Department of any remedial activities, or to represent the Department's determination that a site either does or does not require remediation. All spills, leaks, or discharges of toxic or hazardous materials, as defined by Section 760-1203 of the Sanitary Code, must be reported to the Office of Pollution Control, which will have the sole authority to determine what, if any, cleanup will be required.

When assessing the need for cleanup at a specific site, in addition to the potential for migration of contaminants to groundwater the Department will consider all human health and environmental factors that are available, including the potential for direct exposure via dermal absorption, inhalation or ingestion pathways. The soil cleanup objectives contained in this document do not account for potential soil vapor or soil vapor intrusion impacts. In many cases, site specific cleanup criteria may vary from the values listed in this SOP.

Be advised that, in addition to meeting the Suffolk County Department of Health Services (SCDHS) requirements, the responsible party must meet the requirements of the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA).

## CRITERIA

As stated in Articles 7 and 12 Suffolk County Sanitary Code, it is the policy of the County of Suffolk to maintain its water resources as near to their natural condition of purity as reasonably possible. As such, the goal of any remedial action required by this Department is to return the site to predischARGE conditions. If this is not possible, at a minimum, the cleanup must ensure reasonable protection for public health and the environment.

Appendices A, B and C contain Action Levels and Cleanup Objectives for Volatile Organic Compounds (VOCs), metals and Semi-Volatile Organic Compounds (Semi-VOCs), respectively. When the concentration of a single contaminant, or a class of contaminants such as total petroleum hydrocarbons, meets, or exceeds, the "Action Level", a cleanup, or other action, is required. Under most conditions, the contaminant concentration in the soil after remediation should not exceed the values indicated in the "Cleanup Objective" column.

Cleanup Objectives for VOCs and Semi-VOCs were established in a manner consistent with the New York State Department of Environmental Conservation's Technical and Administrative Guidance Memorandum, (TAGM) HWR-94-4046. Where measured Soil Partitioning Coefficients ( $K_{oc}$ ) could be found, they were used. If not, the  $K_{oc}$  was calculated based on the compound's Octanol / Water Partitioning Coefficient ( $K_{ow}$ ). If the  $K_{ow}$  was not available, the  $K_{oc}$  was estimated based on solubility. Individual VOC and Semi-VOC Cleanup Objectives were capped at a maximum allowable concentration of 100,000 ppb.

Cleanup Objectives for metals have been revised from those listed in the original document to more closely conform to the groundwater protection cleanup objectives contained in 6NYCRR Part 375. Cleanup Objectives for metals assume a 20:1 Dilution Attenuation Factor (DAF), consistent with Part 375. Action Levels for metals assume a DAF of 100.

In order to perform a proper environmental evaluation, the Department may require additional analysis to be performed based on the chemicals stored, or in use, at a site. This may include Total Petroleum Hydrocarbons (TPH), cyanides, phenols, PCBs, pesticides and/or a more extensive list of metals, VOCs and/or Semi-VOCs. Cleanup objectives and action levels for these additional parameters will be established on a case by case basis.

Although TPH analysis is not normally required by this Department, if the analysis is performed on a sample and the TPH concentration is greater than, or equal to, 500 ppm, the Department will require the responsible party to analyze the sample for Semi-VOCs via EPA Method 8270. The results of this analysis will then be compared with the Semi-VOC values listed in Appendix C.

Liquid endpoint samples must be collected if groundwater is encountered during a cleanup operation. If the concentration of VOCs, Semi-VOCs or metals in the sample exceeds 100 times the contaminant's discharge standard, the Department will require a groundwater sample to be collected immediately downgradient of the point of contamination to determine if there has been an impact on the groundwater. If significant groundwater contamination is found, a more extensive groundwater investigation will be required. **The Department reserves the right to require the installation of monitoring well(s) at lower contaminant levels based on the type**

**of contaminant encountered and other site specific conditions.**

**Other factors to be considered when evaluating a site :**

In many instances, additional information is available which the Department will utilize when establishing cleanup goals, or action levels, for a specific site. Some factors that are considered when reviewing site specific conditions to decide if cleanup goals should be set higher or lower than the guidance values listed in this document include, but are not be limited to:

<u>Site history</u> -	Past discharge practices, as well as the extent and type of discharge discovered, will be considered.
<u>Type of Contaminant</u> -	Physical and/or chemical characteristics of a contaminant will be considered. For example, the department may require groundwater sampling, and/or a soil vapor investigation to be undertaken, due to high concentrations of tetrachloroethene and/or its breakdown products detected in initial samples even though soil cleanup objectives were met in post remediation samples.
<u>Site location</u> -	Facilities located in water sensitive areas or near drinking water wells may require more stringent cleanup objectives.
<u>Distance to groundwater</u> -	Since this guidance document assumes a 100 fold reduction in contaminant concentrations between the source area and the drinking water supply, if the distance between the contamination and the groundwater is less than three feet, or a drinking water supply well is located nearby, action levels or cleanup goals may be lower than the guidance values listed in this document.
<u>Monitoring well data</u> -	If groundwater contamination can be attributed to the discharge, more extensive remediation or investigation may be required.
<u>Future use of site</u> -	Although it is not this department's policy to allow pockets of contamination to remain in the ground throughout the county, in certain cases, where the cleanup objectives listed in this document can not be achieved, higher concentrations of contaminants may be allowed to remain in place if the site can be stabilized in a manner acceptable to the Department. In these instances, land, or deed, restrictions may be required.
<u>Direct Human Exposure</u> -	If ingestion, inhalation or dermal contact is a concern, other soil screening guidance documents should be used to formulate a cleanup goal, especially if that value is lower than the "Cleanup Objective" listed in this document.



**APPENDIX A**  
**CLEANUP OBJECTIVES AND ACTION LEVELS**  
**FOR VOLATILE ORGANICS (UG/KG)**

<u>Contaminant</u>	<u>Action Levels (ppb)</u>	<u>Cleanup Objectives (ppb)</u>
Acetone	**	**
Acrolein	100	50
Acrylonitrile	100	50
Allyl Chloride	400	200
t-Amyl Methyl Ether	4,000	2,000
Benzene	120	60
Bromobenzene	2,800	1,400
Bromochloromethane	400	200
Bromodichloromethane	4,600	2,300
Bromoform	13,000	6,300
n-Butyl Acetate	20,000	10,000
n-Butylbenzene	12,000	5,900
sec-Butylbenzene	12,000	5,900
tert-Butylbenzene	12,000	5,900
t-Butyl Ethyl Ether	4,000	2,000
Carbon Disulfide	5,600	2,800
Carbon Tetrachloride	1,600	800
Chlorobenzene	2,200	1,100
Chlorodifluoromethane	100	50
Chloroethane	400	200
2-Chloroethyl Vinyl Ether	1,000	500
Chloroform	800	400
Chloromethane	100	50
Chlorotoluene(s)	5,200	2,600
cis-Decahydronaphthalene	200,000	100,000
trans-Decahydronaphthalene	200,000	100,000
Decane	200,000	100,000
Dibromochloromethane	6,200	3,100
1,2-Dibromo-3-chloropropane	100	50
1,2-Dibromoethane	600	300
Dibromomethane	400	200
o-(1,2)-Dichlorobenzene	2,200	1,100
m-(1,3)-Dichlorobenzene	4,800	2,400
p-(1,4)-Dichlorobenzene	3,600	1,800
Dichlorodifluoromethane	600	300

Appendix A (continued)

<u>Contaminant</u>	<u>Action Levels (ppb)</u>	<u>Cleanup Objectives (ppb)</u>
1,1-Dichloroethane	600	300
1,2-Dichloroethane	100	50
1,1-Dichloroethene	600	300
cis-1,2-Dichloroethene	500	250
trans-1,2-Dichloroethene	400	200
1,2-Dichloropropane	100	50
1,3-Dichloropropane	600	300
2,2-Dichloropropane	600	300
1,1-Dichloropropene	200	100
cis-1,3-Dichloropropene	100	50
trans-1,3-Dichloropropene	100	50
p-Diethylbenzene	52,000	26,000
Diethyl Ether	600	300
Ethylbenzene	2,000	1,000
Ethyl Methacrylate	4,200	2,100
p-Ethyltoluene	9,000	4,500
Freon 113	12,000	6,000
Hexachlorobutadiene	54,000	27,000
Hexachloroethane	22,000	11,000
Hexane	150,000	73,000
2-Hexanone	13,000	6,700
Isopropylbenzene	9,400	4,700
p-Isopropyltoluene	22,000	11,000
Limonene	200,000	100,000
Methylene Chloride	100	50
(MTBE) tert-Butyl methyl ether	200	100
Methyl Ethyl Ketone (Butanone)	400	200
Methyl Iodide	200	100
Methyl Isobutyl Ketone	1,400	700
Methyl Isothiocyanate	600	300
Methyl Methacrylate	1,400	700
Naphthalene	24,000	12,000
Nitrobenzene	100	50
2-Nitropropane	600	300
Nonane	200,000	100,000
Octane	200,000	100,000
n-Propylbenzene	8,000	4,000
Styrene	9,200	4,600

<u>Contaminant</u>	<u>Action Levels (ppb)</u>	<u>Cleanup Objectives (ppb)</u>
1,1,1,2-Tetrachloroethane	600	300
1,1,2,2-Tetrachloroethane	800	400
Tetrachloroethene	2,600	1,300
Tetrahydrofuran	2,200	1,100
1,2,4,5-Tetramethylbenzene	18,000	8,800
Toluene	3,000	1,500
1,2,3-Trichlorobenzene	17,000	8,300
1,2,4-Trichlorobenzene	17,000	8,300
1,1,1-Trichloroethane	1,400	700
1,1,2-Trichloroethane	200	100
Trichloroethene	1,000	500
Trichlorofluoromethane	1,600	800
1,2,3-Trichloropropane	100	50
1,2,4-Trimethylbenzene	7,200	3,600
1,3,5-Trimethylbenzene	16,800	8,400
Undecane	200,000	100,000
Vinyl Acetate	600	300
Vinyl Chloride	100	50
Xylene(s)	3,200	1,600

\*\* Due to its relatively short half-life in the environment, if acetone is the only contaminant of concern in a sample, the primary response should be to determine and eliminate the source of the acetone discharge. The requirement to perform a remediation will be determined on a case-by-case basis.

## **APPENDIX B**

### **SOIL CLEANUP OBJECTIVES AND ACTION LEVELS FOR METALS**

#### **(MG/KG)**

<u>Contaminant</u>	<u>Action Levels (ppm)</u>	<u>Cleanup Objective (ppm)</u>
Arsenic	30.0	6.0
Barium	4,000.0	820.0
Beryllium	240.0	47.0
Cadmium	40.0	7.5
Chromium	100.0	20.0
Copper	8,500.0	1,700.0
Lead	2,000.0	450.0
Mercury	3.7	0.7
Nickel	650.0	130.0
Silver	50.0	10.0

Note: Certain metals, such as aluminum, iron and manganese, appear naturally in Long Island soils and are not considered to be significant under most conditions. Other metals will be evaluated on a case-by-case basis.

## **APPENDIX C**



**CLEANUP OBJECTIVES AND ACTION LEVELS**  
**FOR SEMI-VOLATILE ORGANICS (UG/KG)**

	<u>Action Levels</u> (ppb)	<u>Cleanup Objectives</u> (ppb)
Acenaphthene	200,000	98,000
Anthracene	200,000	100,000
Benzo(a)anthracene	2,000	1,000
Benzo(b)fluoranthene	3,400	1,700
Benzo(k)fluoranthene	3,400	1,700
Benzo(g,h,i)perylene	200,000	100,000
Benzo(a)pyrene	44,000	22,000
Chrysene	2,000	1,000
Dibenzo(a,h)anthracene	200,000	100,000
Fluoranthene	200,000	100,000
Fluorene	200,000	100,000
Indeno(1,2,3-cd)pyrene	16,000	8,000
Phenanthrene	200,000	100,000
Pyrene	200,000	100,000

Note: VOC and Semi-VOC contaminants were evaluated in a manner consistent with the New York State Department of Environmental Conservation's Technical and Administrative Guidance Memorandum (TAGM), HWR-94-4046. Cleanup objectives were established using the following relationship, subject to a maximum contaminant concentration of 100,000 ppb. Action levels were generally set at twice the cleanup objective, subject to a maximum contaminant concentration of 200,000 ppb. Cleanup Objectives were calculated using the following:

$$C_s = (DAF)(f)(C_w)(K_{oc})$$

Where:

- $C_s$  = Allowable Soil Concentrations (ppb)
- DAF = Dilution Attenuation Factor of 100
- $f$  = organic fraction in soil (assumed to be 1%, or 0.01)
- $C_w$  = Water Quality Value (6NYCCR 703.5, or TOGS 1.1.1) in ppb
- $K_{oc}$  = Organic Carbon Partition Coefficient (an approximation of the propensity of a compound to adsorb to organic matter in the soil)

Metals cleanup objectives were calculated based on the following:

$$C_s = (DAF)(C_w)(K_d)$$

Where:

- $C_s$  = Allowable Soil Concentrations (ppm)
- DAF = Dilution Attenuation Factor of 20 for Cleanup Objectives and 100 for Action Levels
- $C_w$  = Water Quality Value (6NYCCR 703.5, or TOGS 1.1.1) in ppm
- $K_d$  = Soil Water Distribution Coefficient (partitioning coefficient for inorganics)