

# SITE HAZARD ASSESSMENT

## Worksheet 1

### Summary Score Sheet

#### SITE INFORMATION:

Halfon Candy Company  
9229 10th Avenue S  
Seattle, King County, WA 98108

Cleanup Site ID: 229

Facility/Site ID: 1557860

|           |     |                |            |
|-----------|-----|----------------|------------|
| Section:  | 32  | Latitude:      | 47.51967   |
| Township: | 24N | Longitude:     | -122.32105 |
| Range:    | 4E  | Tax/Parcel ID: | 2433700076 |

*Site Scored/ranked for the August 2015 Hazardous Sites List Publication*

#### SITE DESCRIPTION:

The Halfon Candy Company site (Site) is a former (and current) candy distribution facility located in Seattle, King County, Washington. The 0.95-acre property is located approximately 3,000 feet from the Lower Duwamish Waterway (LDW), and zoned for industrial (IG2 U/65) use.

Adjacent properties include several manufacturing warehouses to the north, east, and south. To the west is a painting and sanding company (Puget Sound Coatings). The property is bordered on the east by 10th Avenue South.

The Site is currently operated as Halfon Candy Company by Nell Halfon.

The Site is located on the west side of 10th Avenue South, between South Cambridge Street to the south and South Barton Street to the north. The property is located within the West Sea King Industrial Park source control area. There is one 31,300 square foot distribution warehouse on the property, constructed in approximately 1978.

#### SITE BACKGROUND:

A summary of prior operations/tenants at the subject property is presented below.

| <u>From</u> | <u>To</u> | <u>Operator/Tenant</u> | <u>Activity</u>              |
|-------------|-----------|------------------------|------------------------------|
|             | 1998      | Nakanishi & Phelps     |                              |
| 1998        | 2003      | IJ Halfon              | Candy distribution warehouse |
| 2003        | 2014      | Nell Halfon            | Candy distribution warehouse |

#### SITE CONTAMINATION:

In 2007 the Halfon Candy Company site was reported to Washington State Department of Ecology (Ecology) and placed on the Confirmed and Suspected Contaminated Sites (CSCSL) list with ID number 229.

In June 2007, accumulated brown liquid was observed in the water meter box at the Halfon Candy Company property. Seattle Public Utilities investigated potential impacts by collecting a sample of the accumulated liquid. Sample pH was 8.9, and total petroleum hydrocarbons (TPH) were not detected in the sample. The sample was analyzed for 60 metals, and concentrations of arsenic, iron, lead, and total chromium were detected at concentrations above the Model Toxics Control Act (MTCA) Method A cleanup levels for groundwater. Antimony, phosphorus, and vanadium were detected at concentrations above MTCA Method B cleanup levels for groundwater. A visually similar liquid was also observed collecting in shallow pools on the east side of the Site.

On July 19, 2007, an unnamed employee from the Halfon Candy Company reportedly told Seattle Public Utilities that she had observed the brown water in the water meter box for the last seven years.

Cement kiln dust (CKD) has reportedly been historically used as fill in the area. After reviewing the laboratory results from the sampled liquid, Dan Cargill, with the Washington State Department of Ecology, suggested that the liquid may be cement kiln dust leachate.

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#### PAST REMEDIATION ACTIVITIES:

No remedial activities have occurred at the Site.

#### CURRENT SITE CONDITIONS:

Metals are expected to be present in soil at the Site, and may be related to CKD used as fill prior to construction of the present building.

Arsenic, iron, lead, and total chromium were detected in accumulated liquid in the Site water meter box at concentrations above the MTCA Method A cleanup levels for groundwater. Antimony, phosphorus, and vanadium were reported at concentrations above MTCA Method B cleanup levels for groundwater. It is unclear from the documentation whether this accumulated water is shallow groundwater, or if it is surface water runoff from the Site, so both pathways are considered in the scoring for this Site. A storm drain runs along 10th Avenue South, however it is unclear whether storm water from the Site discharges to the storm drain, where the catchbasins for this storm drain are located, or where this storm drain discharges to.

The approximate depth to groundwater is 7 to 13 feet below ground surface, with groundwater flowing to the east (estimated based on surface topography). Subsurface soils are expected to be sand and silt with some CKD fill.

#### SPECIAL CONSIDERATIONS:

Checked boxes indicate routes applicable for Washington Ranking Method (WARM) scoring

☒ **Surface Water**

Liquid with concentrations of metals above the MTCA Method A and B cleanup levels is present at the surface of the Site, and may be transported to the LDW via storm drains.

☐ **Air**

Cement kiln fill is expected to be present on the property, but metals are not expected to be available to the air route because the Site is paved or covered in gravel.

☒ **Groundwater**

Concentrations above the corresponding MTCA Method A cleanup levels for arsenic, iron, lead, total chromium, antimony, vanadium, and phosphorus were found in accumulating shallow groundwater sampled from a water meter box.

CKD fill is suspected to be present at the Site due to high metals concentrations in groundwater and historical use of CKD as fill in the area. Notes in Ecology's files suggest that elevated metals concentrations in groundwater in the vicinity of the Site could be due to leachate from cement kiln dust. Several parcels to the south of the Site are confirmed to contain CKD fill, and several other tax parcels are suspected to contain CKD fill based on anecdotal evidence.

It is unclear whether this accumulated liquid is groundwater or surface water, so both routes are considered in the scoring of this Site. For the purposes of scoring, surface water in the storm drain system is assumed to discharge to the LDW.

The Washington Ranking Manual (WARM) does not include toxicity data for vanadium and phosphorus, so they are not included in the scoring for this Site.

#### ROUTE SCORES:

Surface Water/ Human Health: 22.1

Surface Water/ Environment: 43.2

Air/ Human Health:

Air/ Environment:

Groundwater/ Human Health: 31.4

**Overall Rank: 4**

# SITE HAZARD ASSESSMENT

## Worksheet 1

### Summary Score Sheet

#### REFERENCES:

- 1 King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed February 2014.  
<http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>
  - 2 Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. <http://mcdc.missouri.edu/websas/caps10c.html>. Accessed February 2014.
  - 3 National Climatic Data Center 2011 Local Climatological Data for Seattle, Seattle Tacoma Airport. <http://www1.ncdc.noaa.gov/pub/orders/IPS-90B1F39F-6CFA-4A6B-AA82-5ED1FF897CCC.pdf>
  - 4 Science Applications International Corporation, 2013, Lower Duwamish Waterway RM 3.8 to 4.2 West Sea King Industrial Park Summary of Existing Information and Identification of Data Gaps. May 2013.
  - 5 WARM Scoring Manual
  - 6 WARM Toxicological Database
  - 7 Washington Department of Transportation 24-hour Isopleth Maps, January 2006 update. <http://www.wsdot.wa.gov/publications/fulltext/Hydraulics/Wa24hrIsopleths.pdf>
  - 8 Washington State Department of Ecology, 2007, Environmental Report Tracking System ERTS# 564392. July 31, 2007.
  - 9 Water Resources Explorer : Ecology Water Resources Explorer, accessed February 2014. <https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx>
  - 10 Zand, Shab, 2007, Email Re: Call about 9229 10th Ave S. August 7, 2007.
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**SITE HAZARD ASSESSMENT**  
**Worksheet 2**  
**Route Documentation**

Cleanup Site ID: 229  
Facility/Site ID: 1557860

Halfon Candy Company

**1. SURFACE WATER ROUTE**

**List those substances to be considered for scoring:**

Arsenic, lead, chromium (assumed to be trivalent for the purposes of scoring), antimony

**Explain the basis for choice of substances to be used in scoring:**

Presence in accumulated liquid sample

**List those management units to be considered for scoring:**

Surface water

**Explain basis for choice of unit to be used in scoring:**

Potential for transport to surface water bodies via the storm drains

**2. AIR ROUTE**

**List those substances to be considered for scoring:**

Not applicable

**Explain the basis for choice of substances to be used in scoring:**

**List those management units to be considered for scoring:**

**Explain basis for choice of unit to be used in scoring:**

**3. GROUNDWATER ROUTE**

**List those substances to be considered for scoring:**

Arsenic, lead, chromium (assumed to be trivalent for the purposes of scoring), antimony

**Explain the basis for choice of substances to be used in scoring:**

Presence in accumulated liquid sample

**List those management units to be considered for scoring:**

Groundwater

**Explain basis for choice of unit to be used in scoring:**

Prior detection in accumulated water sample. Groundwater contamination likely from soils containing cement kiln dust.

**Worksheet 4**  
**Surface Water Route**

CSID: 229

Site Name: Halfon Candy Co

**1.0 Substance Characteristics**

**1.1 Human Toxicity**

| Substance            | Drinking Water Standard Value | Acute Toxicity Value | Chronic Toxicity Value | Carcinogenicity Value |
|----------------------|-------------------------------|----------------------|------------------------|-----------------------|
| Arsenic              | 8                             | 5                    | 5                      | 7                     |
| Lead                 | 6                             | X                    | 10                     | X                     |
| Chromium (trivalent) | 6                             | X                    | 1                      | X                     |
| Antimony             | 8                             | 10                   | 5                      | X                     |
|                      |                               |                      |                        |                       |
|                      |                               |                      |                        |                       |

Highest Value 10

Bonus Points? 2

Human Health Toxicity Value

**1.2 Environmental Toxicity**

| Substance            | Acute Water Quality Criteria |       | Non-human Mammalian Acute Toxicity |       |
|----------------------|------------------------------|-------|------------------------------------|-------|
|                      | ug/L                         | Value | mg/kg                              | Value |
| Arsenic              | 69                           | 6     | 763                                | 5     |
| Lead                 | 140                          | 4     | X                                  | X     |
| Chromium (trivalent) | 10,300                       | 2     | X                                  | X     |
| Antimony             | X                            | X     | 7                                  | 10    |
|                      |                              |       |                                    |       |
|                      |                              |       |                                    |       |

Environmental Toxicity Value

**1.3 Substance Quantity**

Amount: Approximately 1,500 square feet

Basis: Estimated extent of site where surface water  
appeared to be pooling at the surface  
(based on photos and aerial images)

Substance Quantity Value

**2.0 Migration Potential**

**2.1 Containment**

Containment Value

Explain Basis: No runoff controls present; potentially impacted soil  
present at the surface

**2.2 Surface Soil Permeability**

Soil Permeability Value

Expected to be sand and silt with CKD fill

**2.3 Total Annual Precipitation**

Total Precipitation Value

37 inches

**2.4 Max 2-yr/24-hour Precipitation**

2YR/24HR Precipitation Value

2.4 inches

**2.5 Floodplain**

Floodplain Value

Not in the floodplain

**2.6 Terrain Slope**

Slope Value

Water is piped within storm drain system

**Worksheet 4**  
**Surface Water Route**

CSID: 229

Site Name: Halfon Candy Co

**3.0 Targets**

**3.1 Distance to Surface Water**

3,000 feet to the Duwamish River

Surface Water Distance Value

**3.2 Population Served within 2 miles**

0 people

Population Value

**3.3 Area Irrigated within 2 miles**

0 acres

Irrigation Value

**3.4 Distance to Nearest Fishery Resource**

3,000 feet to the Duwamish River

Fishery Value

**3.5 Distance to and Name of Nearest Sensitive Environment**

3,000 feet to the Duwamish River

Sensitive Environment Value

**4.0 Release**

Explain basis for scoring a release to surface water

No documented current releases to storm drain

Release to Surface Water Value

**Pathway Scoring - Surface Water Route, Human Health Pathway**

$$SW_H = (SUB_{SH} * 40 / 175) * [(MIG_S * 25 / 24) + REL_S + (TAR_{SH} * 30 / 115)] / 24$$

Where:

$SUB_{SH}$  = (Human Toxicity Value + 3) \* (Containment + 1) + Substance Quantity

$MIG_S$  = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope

$REL_S$  = Release to Surface Water

$TAR_{SH}$  = Distance to Surface Water + Population Served by Surface Water + Area Irrigated

|            |      |
|------------|------|
| $SUB_{SH}$ | 171  |
| $MIG_S$    | 12   |
| $REL_S$    | 0    |
| $TAR_{SH}$ | 4.0  |
| $SW_H$     | 22.1 |

**Pathway Scoring -Surface Water Route, Environmental Pathway**

$$SW_E = (SUB_{SE} * 40 / 153) * [(MIG_S * 25 / 24) + REL_S + (TAR_{SE} * 30 / 34)] / 24$$

Where:

$SUB_{SE}$  = (Env Tox Value + 3) \* (Containment + 1) + Substance Qty

$MIG_S$  = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope

$REL_S$  = Release to Surface Water

$TAR_{SE}$  = Distance to Surface Water + Distance to Fishery + Distance to Sensitive Environment

|            |      |
|------------|------|
| $SUB_{SE}$ | 149  |
| $MIG_S$    | 12   |
| $REL_S$    | 0    |
| $TAR_{SE}$ | 16.0 |
| $SW_E$     | 43.2 |

**Worksheet 6**  
**Groundwater Route**

CSID: 229

Site Name: Halfon Candy Co

**1.0 Substance Characteristics**

**1.1 Human Toxicity**

| Substance            | Drinking Water<br>Standard Value | Acute Toxicity<br>Value | Chronic Toxicity<br>Value | Carcinogenicity<br>Value |
|----------------------|----------------------------------|-------------------------|---------------------------|--------------------------|
| Arsenic              | 8                                | 5                       | 5                         | 7                        |
| Lead                 | 6                                | X                       | 10                        | X                        |
| Chromium (trivalent) | 6                                | X                       | 1                         | X                        |
| Antimony             | 8                                | 10                      | 5                         | X                        |
|                      |                                  |                         |                           |                          |
|                      |                                  |                         |                           |                          |

Highest Value 10

Bonus Points? 2

Toxicity Value

**1.2 Mobility**

Cations/Anions

Max Value:

Solubility

Max Value:

3

Mobility Value

**1.3 Substance Quantity**

Amount: 4,598 cubic yards

Basis: Estimated volume of metals-impacted soil  
and cement kiln dust (assumes 3 foot  
thickness throughout parcel)

Substance Quantity Value

**2.0 Migration Potential**

**2.1 Containment**

Containment Value

Explain Basis: Contaminated soil

**2.2 Net Precipitation**

>10 to 20 inches

Net Precipitation Value

**2.3 Subsurface Hydraulic Conductivity**

Expected to be sand and silt with CKD fill

Conductivity Value

**2.4 Vertical Depth to Groundwater**

0 to 25 feet

Confirmed release: No

Depth to Aquifer Value

**3.0 Targets**

**3.1 Groundwater Usage**

Aquifer Use Value

Private supply, but alternate sources are available with minimum hookup requirements

**3.2 Distance to Nearest Drinking Water Well**

>2,640 to 5,000 feet

Well Distance Value

**3.3 Population Served within 2 Miles**

9 people

Population Served Value

**Worksheet 6**  
**Groundwater Route**

**CSID:** 229

**Site Name:** Halfon Candy Co

**3.4 Area Irrigated by GW Wells within 2 miles**

Area Irrigated Value

1 acres

**4.0 Release**

Release to Groundwater Value

Explain basis for scoring a release to groundwater:

No confirmed release to groundwater

**Pathway Scoring - Groundwater Route, Human Health Pathway**

$$GW_H = (SUB_{GH} * 40 / 208) * [(MIG_G * 25 / 17) + REL_G + (TAR_{GH} * 30 / 165)] / 24$$

Where:

$SUB_{GH}$  = (Human toxicity + mobility + 3) \* (Containment + 1) + Substance Qty

$MIG_G$  = Depth to Aquifer + Net Precip + Hydraulic Conductivity

$REL_G$  = Release to Groundwater

$TAR_{GH}$  = Aquifer Use + Well Distance + Population Served + Area Irrigated

|            |      |
|------------|------|
| $SUB_{GH}$ | 202  |
| $MIG_G$    | 12   |
| $REL_G$    | 0    |
| $TAR_{GH}$ | 9.8  |
| $GW_H$     | 31.4 |

## Washington Ranking Method

### Route Scores Summary and Ranking Calculation Sheet

**Site Name:** Halfon Candy Co.

**CSID:** 229

**Site Address:** 9229 10th Avenue South

**FSID:** 1557860

#### HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

| Pathway       | Route Score | Quintile Group |
|---------------|-------------|----------------|
| Surface Water | 22.1        | 3              |
| Air           | ns          | 0              |
| Groundwater   | 31.4        | 2              |

|    |   |
|----|---|
| H= | 3 |
| M= | 2 |
| L= | 0 |

$$\begin{array}{c}
 H^2 \quad + \quad 2M \quad + \quad L \\
 \hline
 9 \quad + \quad 4 \quad + \quad 0 \\
 \hline
 8
 \end{array}$$

**Human Health  
Priority Bin Score:**  
2  
 rounded up to next  
whole number

#### ENVIRONMENT ROUTE SCORES

Enter Environment Route Scores for all Applicable Routes:

| Pathway       | Route Score | Quintile Group |
|---------------|-------------|----------------|
| Surface Water | 43.2        | 4              |
| Air           | ns          | 0              |

|    |   |
|----|---|
| H= | 4 |
| L= | 0 |

$$\begin{array}{c}
 H^2 \quad + \quad 2L \\
 \hline
 16 \quad + \quad 0 \\
 \hline
 7
 \end{array}$$

**Environment  
Priority Bin Score:**  
3  
 rounded up to next  
whole number

**Comments/Notes:**

**FINAL MATRIX  
RANKING**

4

#### FOR REFERENCE:

##### Final WARM Bin Ranking Matrix

| Human Health Priority | Environment Priority |   |   |   |   |     |
|-----------------------|----------------------|---|---|---|---|-----|
|                       | 5                    | 4 | 3 | 2 | 1 | N/A |
| 5                     | 1                    | 1 | 1 | 1 | 1 | 1   |
| 4                     | 1                    | 2 | 2 | 2 | 3 | 2   |
| 3                     | 1                    | 2 | 3 | 4 | 4 | 3   |
| 2                     | 2                    | 3 | 4 | 4 | 5 | 3   |
| 1                     | 2                    | 3 | 4 | 5 | 5 | 5   |
| N/A                   | 3                    | 4 | 5 | 5 | 5 | NFA |

##### Quintile Values for Route Scores - February 2015 Values

| Quintile | Human Health  |         |              | Environment   |         |
|----------|---------------|---------|--------------|---------------|---------|
|          | Surface Water | Air     | Ground Water | Surface Water | Air     |
| 5        | >= 30.7       | >= 37.6 | >= 51.6      | >= 50.9       | >= 29.9 |
| 4        | >= 23.1       | >= 23.8 | >= 40.9      | >= 31.2       | >= 22.5 |
| 3        | >= 14.1       | >= 15.5 | >= 33.2      | >= 23.6       | >= 14.0 |
| 2        | >= 7.0        | >= 8.5  | >= 23.5      | >= 11.0       | >= 1.6  |
| 1        | <= 6.9        | <= 8.4  | <= 23.4      | <= 10.9       | <= 1.5  |

Quintile value associated with each route score entered above



Legend:

 Property location (approximate)

Notes:

1. All locations are approximate, and not to scale.



**Halfon Candy Co.**  
**9229 10<sup>th</sup> Avenue South**  
**Seattle, WA 98108**

**Site Overview Map**

**CSID 229**  
CSID229.vsd