Public Workshop
Environmental Analysis for the Evaluation of Metal Shredding Facilities and Waste Management (Implementation of SB 1249)

May 8, 2017 and May 15, 2017
Rick Brausch, Megan Cambridge, Ed Benelli and Matt Evans
DTSC Policy and Program Support Division
Agenda

- Opening Remarks
- Evaluation of Metal Shredding Facilities
  - Background and History
  - Evaluation of Metal Shredding facilities
  - Landfills Accepting Metal Shredding Waste
  - Waste Classification
  - Environmental Considerations
- Questions and Comments
What is a Metal Shredding Facility?
Metal Shredding Facilities and Landfills accepting Metal Shredder Waste

Authorized Metal Shredding Facilities
1. Schnitzer Steel Products - Oakland
2. Sims Metal Mgmt - Redwood City
3. SA Recycling - Bakersfield
4. SA Recycling - Terminal Island
5. SA Recycling - Anaheim
6. Ecology Auto Parts - Colton

Landfills Accepting Metal Shredder Waste
A. Vasco Road Landfill - Livermore
B. Altamont Landfill - Livermore
C. H.M. Holloway - Bakersfield
D. Chiquita Canyon Landfill - Castiac
E. Simi Valley Landfill - Simi Valley
Metal Shredding Processes

Scrap metal

Products and Aggregate

Waste

Waste Disposal

Figure 1.

Shredding

Hammermill

Ferrous Metal Separation

Aggregate

10-20% Product
80-90% Haz. Waste

Non-Ferrous Metal Separation

Non-Ferrous Metal

Product

Ferrous Metal

Product

Non-Haz. Waste

Haz. Waste

Shredder Waste

Treatment
Typical Vehicle Metal Content

Shredding a typical 2,500 lb. car produces:

- 72% or 1,790 lbs. of ferrous metals - iron, steel
- 7% or 178 lbs. of non-ferrous metals - copper, aluminum
- 21% or 532 lbs. of metal shredder waste (MSW)
Metal Shredder Waste

- Rubber
- Foam
- Plastic
- Glass
- Wood
- Dirt
- Stones
- Nuts, Bolts
- Metal Pieces
- Metal Dusts
Volume of Metal Shredder Waste in Tons

California Generated Hazardous Waste and Metal Shredder Waste Used as Alternative Daily Cover (ADC) in Tons

- 2009: ADC 58.0%, CA Generated HW 51.2%
- 2010: ADC 58.0%, CA Generated HW 51.2%
- 2011: ADC 58.6%, CA Generated HW 51.2%
- 2012: ADC 58.6%, CA Generated HW 51.2%
- 2013: ADC 58.6%, CA Generated HW 51.2%
- 2014: ADC 58.6%, CA Generated HW 51.2%
- 2015: ADC 58.6%, CA Generated HW 51.2%
History of MSW Regulation

- 1984 – California-only non-RCRA hazardous waste
- **Mid-1980’s** – Chemical stabilization treatment method developed to reduce the solubility of the metals
- 1988 – Water Boards designate landfills to accept MSW
- 1988 – DTSC adopts Policy and Procedure 88-6
- **Late 1980’s to early 1990’s** – Shredders authorized to manage their waste as non-hazardous waste
- 2015 – SB 1249 enacted to re-evaluate industry
Current Authority for Metal Shredding Operations

DTSC OPP No. 88-6

Shredding

Scrap metal

Waste

Products and Aggregate

Waste Disposal

Figure 1.

Hammermill

Ferrous Metal Separation

10-20% Product
80-90% Haz. Waste

Aggregate

Ferrous Metal

“f letters”

Non-Ferrous Metal

Product

Non-Haz. Waste

Treatment

Haz. Waste

Shredder Waste
Considerations for Evaluating Metal Shredding Operations

- Concern over fires at a number of facilities
- Concern over releases to the environment
- Enforcement actions had identified issues
- Concern that waste composition had changed
- Interest in demonstrating improvements to treatment method and environmental controls
- Desire to review and revise the original management decisions based on new and current information
SB 1249 (Hill, Ch. 756, Stats. of 2014)
Enacted January 1, 2015, Sunsets January 1, 2018

“It is the intent of the Legislature that the conditional nonhazardous waste classifications … be revoked and that metal shredding facilities be thoroughly evaluated and regulated to ensure adequate protection of the human health and the environment.”
SB 1249 Requirements and Authorizations

- DTSC is required to thoroughly evaluate metal shredding facilities and the management of metal shredder waste.

- DTSC is authorized to:
  - Adopt Alternative Management Standards for metal shredding facilities that would apply *in lieu* of existing hazardous waste control laws.
  - Classify the waste as non-hazardous waste and allow its use as Alternative Daily Cover.
  - Collect annual fees from metal shredding facilities.
SB 1249 Evaluations and Preliminary Analysis

- Environmental and public health regulatory oversight
- Hazardous waste management activities
- Types and amounts of hazardous waste
- The complexity of the activity; i.e., operator training, equipment, and maintenance
- The chemical or physical hazards
- The types of accidents
- Facility locations and the risks posed by proximity to sensitive receptors
To Perform the Evaluation DTSC

- Sent questionnaires to industry
- Conducted site visits
- Reviewed regulatory files, permits, and enforcement histories from:
  - State agencies: Air and Water Boards, Cal Recycle
  - CUPAs and local districts
  - OSHA
- Analyzed waste management practices
- Directed Industry’s Waste Treatability Study
- Collected air samples
- Analyzed environmental data
Storm Water Permits

- **Industrial General Permit**
  - SA Terminal Island
  - SA Bakersfield
  - Schnitzer Steel Products
  - Sims Metal Management

- **Sector-Specific Permit for Scrap Metal Recycling Facilities- Santa Ana RWQCB**
  - SA Anaheim
  - Ecology Auto Parts
Permits and Regulatory History

- Permit Requirements
  - Storm Water Pollution Prevention Plans (SWPPPs)
  - Best Management Practices (BMPs)
  - Monitoring and sampling – response action

- Storm Water Discharge Violations
  - Specific conductance, COD, and metals

- Soil Contamination
  - Petroleum hydrocarbons, metals, and PCBs
## Storm Water Discharge Exceedances

*Highest levels seen for these facilities in these periods*

*Storm Water Multiple Application and Report Tracking System (SMARTS)*

<table>
<thead>
<tr>
<th>Parameter (mg/L)</th>
<th>SA Anaheim</th>
<th>SA Terminal Island</th>
<th>SA Terminal Island</th>
<th>SA Terminal Island</th>
<th>Schnitzer Steel Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>11-12</td>
<td>11-12</td>
<td>13-14</td>
<td>15-16</td>
<td>14-15</td>
</tr>
<tr>
<td>Aluminum</td>
<td>0.514</td>
<td>0.23</td>
<td>0.11</td>
<td>0.23</td>
<td>1.785</td>
</tr>
<tr>
<td>COD</td>
<td>494.3</td>
<td>369</td>
<td>268</td>
<td>247</td>
<td>225</td>
</tr>
<tr>
<td>Iron</td>
<td>0.243</td>
<td>1.9</td>
<td>0.1</td>
<td>0.4</td>
<td>7.785</td>
</tr>
<tr>
<td>Lead</td>
<td>0.004</td>
<td>0.008</td>
<td>0.012</td>
<td>0.015</td>
<td>0.428</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.074</td>
<td>0.11</td>
<td>0.27</td>
<td>0.15</td>
<td>2.305</td>
</tr>
</tbody>
</table>
DTSC observed that some facilities have:

- Operations conducted outdoors
- Unpaved surfaces
- Piles stored outdoors
- Inadequate waste containment
- Insufficient for storm water treatment capacity
- Insufficient or inadequate use of Best Management Practices (BMPs)
Potential for Off-site Air Migration

- DTSC has expressed concern over fugitive air emissions
- Particulate Matter (PM 10, PM 2.5), metals associated with shredding activities, and Volatile Organic Compounds (VOCs)
- History of Light Fibrous Materials (LFM) emissions that resulted in enforcement actions
- Air District requirements vary
Air Pollution Enforcement History

- 2008 - SA Terminal Island - Explosion in Air Pollution Control Device (APCD) caused release of particulate matter and VOCs over the course of several months
- 2014 - Sims - DTSC discovers LFM migrating off-site and being deposited on adjacent properties
- Air Districts have varying requirements for point-source emissions and for fugitive emissions
- Some require Regenerative Thermal Oxidizers and scrubbers to control VOC emissions
Air Pollution Controls and Practices

- Enclosed structures
- Regenerative Thermal Oxidizers and chemical scrubbers
- Hoods over transfer and separation processes
- Mist spray and dust collection
- Cyclones and HEPA Filters
- Dust control – pavement, sweeping, and water sprays
## Regulatory Oversight by Local Air Districts

<table>
<thead>
<tr>
<th>District</th>
<th>Sims Metal</th>
<th>Schnitzer Steel Products</th>
<th>SA Terminal Island</th>
<th>SA Anaheim</th>
<th>SA Bakersfield</th>
<th>Ecology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permit</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Point Source</td>
<td>Hood, H$_2$O, Cyclone</td>
<td>Hood, H$_2$O, Cyclone</td>
<td>Hood, H$_2$O</td>
<td>Hood, H$_2$O</td>
<td>Hood, H$_2$O</td>
<td>Hood, H$_2$O</td>
</tr>
<tr>
<td>VOCs</td>
<td>Scrubber</td>
<td>Scrubber</td>
<td>RTO, Scrubber</td>
<td>RTO, Scrubber</td>
<td>--</td>
<td>RTO</td>
</tr>
<tr>
<td>Fugitive</td>
<td>Ringleman less than 1.0</td>
<td>Ringleman less than 1.0</td>
<td>Must be kept moist</td>
<td>Must be kept moist</td>
<td>5% max opacity, PM10 limit</td>
<td>Must be kept moist</td>
</tr>
</tbody>
</table>

RTO - Regenerative Thermal Oxidizer
DTSC Air Quality Assessment

- Three facilities - cross-section of different operations in different parts of the state
- SA Bakersfield, SA Terminal Island, and Sims
- October 2016 – 3 days each
- Limited evaluation - Snap-shot
- Indicators of potential emissions
Air Sampling Goals and Strategy

Air Sampling Included

- Total Suspended Particulates (TSP)
- Particulate Matter less than 10 and 2.5 microns (PM 10 and PM 2.5)
- Analysis for metals
- Analysis for toxic organic chemicals (TOCs)
- Meteorological stations
Air Sampling at SA Bakersfield
Air Sampling at SA Terminal Island
Air Sampling at Sims
Air Sampling Results
Comparison to US EPA
Ambient Air Quality Standards (AAQS)

<table>
<thead>
<tr>
<th>PM 10</th>
<th>PM 2.5</th>
<th>Metals</th>
<th>TOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAQS exceeded at SA-B, SA-TI, and at Sims</td>
<td>AAQS exceeded at SA-B, SA-TI, and at Sims</td>
<td>Iron and aluminum were found in all samples</td>
<td>Automotive (BTEX) detected at each facility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None of the facilities exceeded the AAQS for lead</td>
<td>Refrigerants (Freon) were detected at each facility</td>
</tr>
</tbody>
</table>
Evaluation of Hazardous Waste Management Activities

- Generators of Hazardous Waste
  - “Materials that Require Special Handling”
  - Used oil, automotive fluids, mercury switches, PCBs, refrigerants, batteries
- Wastewater treatment sludges
- Air pollution control device residuals
- Waste storage
# Hazardous Waste Generation and Transportation for 2015

<table>
<thead>
<tr>
<th>Facility</th>
<th>Soils and other Solids (Tons)</th>
<th>Asbestos (Tons)</th>
<th>Oils (Tons)</th>
<th>PCBs (Tons)</th>
<th>Solvents (Tons)</th>
<th>Other Wastes (Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schnitzer</td>
<td>2,537</td>
<td>0</td>
<td>1.3</td>
<td>0</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>Sims</td>
<td>0.81</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SA Terminal Island</td>
<td>113.1</td>
<td>0</td>
<td>1.3</td>
<td>0.9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ecology Auto Parts</td>
<td>111.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>966</td>
</tr>
<tr>
<td>SA Anaheim</td>
<td>31.7</td>
<td>0.11</td>
<td>80.7</td>
<td>1.6</td>
<td>0.2</td>
<td>2</td>
</tr>
<tr>
<td>SA Bakersfield</td>
<td>50.4</td>
<td>0</td>
<td>2.1</td>
<td>2.2</td>
<td>0.3</td>
<td>3.9</td>
</tr>
</tbody>
</table>
Treatability Study Goals

- Demonstrate optimal treatment at the full-scale
- Does it exhibit a federal RCRA characteristic?
- Does it exhibit a state HW characteristic?
- Treatability Study results can determine most appropriate disposal options
Conducting the Treatability Study

- Bench-scale testing to determine optimum reagent dosage to achieve STLCs
- Full-scale demonstration of optimum dosage
- 240 samples collected
  - 5 facilities
  - 3 days each
  - 16 samples collected per shift
  - 8 treated and 8 untreated
TCLP Analytical Test Method

- Toxicity Characteristic Leaching Procedure (TCLP)
- Test used to determine if it is a federal RCRA waste
- Simulates long-term stability in a landfill environment
- Do metals leach after prolonged contact with acids?
TTLC and STLC Tests

- Total Threshold Limit Concentration (TTLC)
- Soluble Threshold Limit Concentration (STLC)
- Test used to determine if it is a California-only non-RCRA waste
- More aggressive than federal test
- More contaminants are identified
### Treatability Study Results

<table>
<thead>
<tr>
<th>Substance</th>
<th>Untreated TTLC (mg/kg)</th>
<th>Treated TTLC (mg/kg)</th>
<th>Untreated STLC (mg/L)</th>
<th>Treated STLC (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lead</strong></td>
<td>936 (1,000)</td>
<td>776 (1,000)</td>
<td>50.6 (5.0)</td>
<td>3.99 (5.0)</td>
</tr>
<tr>
<td>95% UCL</td>
<td>1,042</td>
<td>845</td>
<td>62.1</td>
<td>4.85</td>
</tr>
<tr>
<td><strong>Copper</strong></td>
<td>13,614 (2,500)</td>
<td>11,196 (2,500)</td>
<td>1.46 (25)</td>
<td>6.23 (25)</td>
</tr>
<tr>
<td>95% UCL</td>
<td>15,332</td>
<td>12,650</td>
<td>1.81</td>
<td>9.82</td>
</tr>
<tr>
<td><strong>Zinc</strong></td>
<td>8,122 (5,000)</td>
<td>5,961 (5,000)</td>
<td>850 (250)</td>
<td>236 (250)</td>
</tr>
<tr>
<td>95% UCL</td>
<td>8,930</td>
<td>7,327</td>
<td>1,000</td>
<td>331.9</td>
</tr>
</tbody>
</table>
DTSC Assessment of Waste Management at Landfills

- Review of Waste Discharge Requirements (WDRs)
- MSW sampling to establish baseline
- Review of surface water and landfill leachate data
- Air sampling planned for June at Vasco Road and Simi Valley Landfills
MSW is Approved for Alternative Daily Cover

- Daily Cover (ADC) is required to control vectors, fires, odors, blowing litter, and scavenging
- Cal Recycle and the RWQCBs authorize the use of MSW as ADC
- Approximately 15 percent of ADC used statewide is MSW
Waste Disposal Practices

- 60 percent of all MSW generated is disposed in two landfills- Altamont and Simi Valley
- Some landfills mix MSW with other wastes at the landfill
Complexity of the Activity

- DTSC is evaluating the complexity of each hazardous waste activity.
- Some activities are regulated by other agencies – i.e., Air Boards, Water Boards, CUPAs, OSHA.
- Identifying areas needing additional oversight i.e., control of waste treatment processes.
- The amount of oversight necessary is part of our decision-making process.
Chemical or Physical Hazards Associated with the Activity

- **Lead** - batteries, solders, alloys, construction, and plumbing
- **Zinc** - Anti-corrosion (galvanization), alloys (brass), paints, pigments, rubber catalyst, fire retardant and wood preservative
- **Copper** - Electrical wiring, electronics, telecommunications, architectural material, industrial materials, wood preservative
- **MRSH** - Mercury, PCBs, refrigerants, oils
- **Treatment Reagents** - Silicates, cement
Types of Accidents

- 2004 - Vasco Road Landfill, fire in stockpiled auto shredder “fluff”
- 2007 - SA Terminal Island, explosion in the metal shredder that damaged the air pollution control system
- 2008 - SA Bakersfield, fire in scrap metal pile
- 2013 - Sims, explosion created a fire in a stockpile
- 2013 - Sims, fire in a pile of crushed cars and scrap metal
Accidents and Injuries Associated with Metal Shredding Activities

- Review of Cal OSHA reports (2002-2015) for metal shredding facilities
- 516 reported Worker’s Compensation injuries
- Physical - 78 percent
- Chronic - 14 percent
- Chemical - 8 percent
# Evaluation of Locations and Risks Posed to Sensitive Receptors

**Nearest Sensitive Receptors to Facilities and Landfills— all distances in miles**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hospital</th>
<th>School</th>
<th>Day Care Center</th>
<th>Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHNITZER</td>
<td>0.35</td>
<td>0.12</td>
<td>0.39</td>
<td>0.19</td>
</tr>
<tr>
<td>SIMS</td>
<td>1.58</td>
<td>1.57</td>
<td>1.79</td>
<td>0.75</td>
</tr>
<tr>
<td>SA TERMINAL ISLAND</td>
<td>1.37</td>
<td>1.22</td>
<td>1.22</td>
<td>0.22</td>
</tr>
<tr>
<td>SIMI VALLEY LANDFILL</td>
<td>1.33</td>
<td>0.34</td>
<td>1.11</td>
<td>0.75</td>
</tr>
<tr>
<td>SA ANAHEIM</td>
<td>0.4</td>
<td>1.1</td>
<td>1.1</td>
<td>0.11</td>
</tr>
<tr>
<td>SA BAKERSFIELD</td>
<td>1.6</td>
<td>1.4</td>
<td>1.12</td>
<td>0.6</td>
</tr>
<tr>
<td>ECOLOGY</td>
<td>0.48</td>
<td>0.5</td>
<td>0.5</td>
<td>0.004</td>
</tr>
<tr>
<td>ALTAMONT LANDFILL</td>
<td>&gt; 2</td>
<td>3.8</td>
<td>&gt; 2</td>
<td>0.78</td>
</tr>
<tr>
<td>CHIQUITA CANYON LF</td>
<td>0.91</td>
<td>1.2</td>
<td>0.91</td>
<td>0.09</td>
</tr>
</tbody>
</table>
Next Steps

- Public Workshops – Receive feedback
- Issue Preliminary Analysis
- Decision-making (early summer)
Please Submit Comments to:

Project Stakeholders E-mail

For use by public to contact Metal Shredder Project Team

E-mail: mswstakeholders@dtsc.ca.gov

Join our electronic List serve at:

http://www.dtsc.ca.gov/ContactDTSC/ELists.cfm
Thank You

Megan Cambridge
Megan.Cambridge@dtsc.ca.gov
(916) 322-4233

Ed Benelli
Edward.Benelli@dtsc.ca.gov
(916) 324-6546

Additional information is available at:

- http://www.dtsc.ca.gov/HazardousWaste/MetalShredderPortal.cfm