SCRAP FLOW STUDIES
&
ENVIRONMENTAL ISSUES
&
METAL THEFT

by Ross Bartley
BIR Environmental & Technical Director

at
ICSG Environmental & Economic Committee
25 April 2013
THE WORLD FEDERATION OF RECYCLING INDUSTRIES

- Created in 1948 with the legal basis as an International non-profit making trade association

- From 72 countries worldwide, almost 900 members being: National trade associations from the recycling sector and direct company members that collect, process, trade and or consume secondary raw materials; as well as machine and equipment manufacturers, and other bodies and individuals with an interest in international recycling
KEY FIGURES OF THE WORLD RECYCLING INDUSTRY

• More than 1.6 million employees worldwide

• 800 million tonnes of commodities processed per year

• Turnover exceeding 200 billion US dollars
A DIVERSIFIED COMMODITY STRUCTURE

4 Commodity Divisions:

- Ferrous metals
- Non-ferrous metals
- Textiles
- Paper

3 Commodity Committees:

- Plastics
- Stainless steel & special alloys
- Tyres
RELATIONSHIPS & TOPICS

Basel Convention  Framework for the Environmentally Sound Management of Hazardous Wastes and Other Wastes

Stockholm Convention  Best Available Techniques – Best Environmental Practices – BAT BEP

Draft Code of Conduct on the Transboundary Movement of Radioactive Material Inadvertently Incorporated into Scrap Metal and Semi-Finished Products of the Metal Recycling Industries

Working Party on Resource Productivity and Waste
Recommendation on Environmentally Sound Management C(2004)100
Sustainable Materials Management
Extended Producer Responsibility

BIR – REPRESENTING THE FUTURE LEADING RAW MATERIAL SUPPLIERS
EUROPEAN ENVIRONMENT LAWS FOR RECYCLERS

The EU’s waste-law landscape
Framework Legislation

- Regulation setting criteria for Copper Scrap ceasing to be Waste
- Waste Shipment Regulation (EC) No 1013/2006 to non-OECD

Waste Treatment Operations
- Incineration 2000/76/EC
- Landfill 99/31/EC
- Recycling Technical Standards

Waste Streams
- Waste electric and electronic equipment Directive 2002/96/EC
- Restriction of Hazardous Substances Directive 2002/95/EC
- Batteries and Accumulators Directive 2006/66/EC
- Packaging and Packaging Waste Directive 94/62/EC
- PCBs Directive 96/59/EC
- POPs Regulation 850/2004/EC
- Mining Waste Directive 2006/21/EC
- Sewage Sludge Directive 86/278/EEC

BIR – REPRESENTING THE FUTURE LEADING RAW MATERIAL SUPPLIERS
EUROPEAN FEDERATIONS
ADMINISTERED BY BIR

European Metal Trade & Recycling Federation
Tel: +32 2 627 5772
E-mail: EUROMETREC@EUROMETREC.ORG
Web: WWW.EUROMETREC.ORG

European Ferrous Recovery & Recycling Federation
Tel: +32 2 627 5771
E-mail: efr@efr2.org
Web: WWW.EFR2.ORG

European Recovered Paper Association
Tel. c/o BIR: +32 2 627 5770
E-mail c/o BIR: BIR@BIR.ORG
Web: WWW.ERPA.INFO
...and this can be observed by looking at industrial production growth, where China has outperformed all other economies.
GLOBAL SCRAP CONSUMPTION HAS GROWN ACROSS METALS OVER THE PAST DECADE, BUT ALL ARE DWARFED BY FERROUS RECYCLING

Scrap used in metal production (million tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zinc</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lead</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Copper</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Aluminium</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Steel</td>
<td>520</td>
<td>572</td>
</tr>
</tbody>
</table>

Source: CRU
### TABLE 1.1: GLOBAL SCRAP CONSUMPTION, 2000 AND 2011 (MILLION TONNES)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>0.6</td>
<td>0.9</td>
<td>3.2%</td>
<td>41.9%</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.8</td>
<td>1.1</td>
<td>2.7%</td>
<td>34.3%</td>
</tr>
<tr>
<td>Lead</td>
<td>3.7</td>
<td>5.8</td>
<td>4.2%</td>
<td>56.6%</td>
</tr>
<tr>
<td>Copper</td>
<td>7.4</td>
<td>8.5</td>
<td>1.3%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Aluminium</td>
<td>11.9</td>
<td>18.2</td>
<td>3.9%</td>
<td>52.9%</td>
</tr>
<tr>
<td>Steel</td>
<td>401.3</td>
<td>572.6</td>
<td>3.3%</td>
<td>42.7%</td>
</tr>
</tbody>
</table>

_Data: CRU_
THE PRICE OF COPPER WENT FROM A LOW OF US$1,338 PER TONNE IN NOVEMBER 2001 TO AN ANNUAL AVERAGE PRICE OF US$10,160 IN FEBRUARY 2011

Source: CRU
MAJOR GLOBAL COPPER SCRAP TRADE FLOWS – 2011
WITH ANNUAL EXPORTS SHOWN (TONNES)

Source: GTIS, CRU
Copper consumption is focused around construction while aluminium end-uses are much more diversified.

Source: GTIS, CRU
METAL USE IN SOCIETY, BESIDES CONSUMER GOODS

Telecommunications
Water treatment
Commemoration
Road furniture e.g. signs, manhole covers
Railways
Electricity supply
Building and construction
Machinery and equipment
etc.,
organised crime is a high concern

metal theft gang jailed

who embarked on a cable theft spree, creating havoc across a swath of the Midlands rail network, have been sentenced to a total of 23 years in prison.

Top row, left to right: Jan Trofin, Alexandru Tofteianu, Mihai Mihart, Mihai Binta; bottom row, left to right: Florin Cojocaru, Stefanel Rusoi, Christian Toader, Costinel Mijoc

By David Millward, Transport Editor
4.50PM GMT 19 Dec 2012

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It is the collateral damage from the theft of metal from critical infrastructure that catches the public, press and politicians’ attention
CONSEQUENTIAL DAMAGE
CONSEQUENTIAL DAMAGE
BURNING COPPER CABLE INSULATION
### Table 1. Measures for new copper cable recovery facilities

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Considerations</th>
<th>Other comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative processes</td>
<td>Various recommended treatment processes should be considered to replace open burning</td>
<td>Processes to consider include:</td>
<td>Incineration is considered to be a best available technique in configuration with suitable gas collection and abatement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cable chopping</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cable stripping</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- High-temperature incineration for material unsuitable for chopping or stripping</td>
<td></td>
</tr>
</tbody>
</table>

Smouldering of copper cables should not be conducted as this practice generates PCDD/PCDF emissions. Open burning should never be considered as an acceptable means of waste treatment. Guidelines and legislation against the smouldering of copper cables have been implemented at federal, state, provincial, territorial and municipal levels by many countries.

Examples of such guidelines and legislation include UNEP 2001; Government of the United Kingdom 1993; Government of Hong Kong 1996; Government of New Zealand 2004.

A consideration is to set premium pricing for unstripped cable and wiring to encourage sending the feed material for treatment in copper smelters using best available techniques.

Achievable performance limits are not applicable, as the smouldering process is not a best available technique or best environmental practice and should not be practised.
BURNING COPPER CABLE INSULATION
Would a declaration by copper metal-works and foundries of a ‘no buy’ policy for burnt cable help to dissuade open-burning and incidentally hinder the theft of copper cable?
The legal international trade in metal scrap has flourished for several thousands of years.

The volume of stolen metal in international trade is estimated at <1% which will be difficult to identify.

..in comparison the illegal waste exports from the EU-27 are measured at 7% (IMPEL stats.)
CO-OPERATION TO COUNTER ORGANISED CRIME

Assessing the Links between Organised Crime and Pollution Crimes

Electronic Waste and Organised Crime
Assessing the Links
Phase II Report for the INTERPOL Pollution Crime Working Group

Environmental crime

The Council adopted a resolution on the creation of an international network for countering environmental crime (13203/11). Environmental crime is prevalent in all regions, in particular in the three countries which are not yet a member of the European Union. A number of illegal activities are often detected by international and cross-border investigations.

In particular, the resolution states:

- identifying criminal networks is essential for detecting and dismantling, and eventually dismantling, criminal activity.
- improving the exchange of information and expertise among national and international police authorities.

CEPOL five-year report

The Council endorsed the CEPOL (European Police College) five-year strategic action report which includes the recommendations of the CEPOL Governing Board (19621/1). This report is designed to secure the visibility, awareness, effectiveness and efficiency of CEPOL and its work in the field.

Final report

"Learning by doing"

May 2009
Thank you for your attention!

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