OAKDENE HOLLINS
RESEARCH & CONSULTING

Conflict Minerals

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The Oakdene Hollins viewpoint on EU policy discussion for the ICT industry

On 26th March 2013, the European Commission (EC) launched a public consultation regarding the development of conflict minerals regulations. The objective of the initiative is to decrease the financial return to the armed militias that operate in the region comprising the Democratic Republic of the Congo (DRC) and border countries and hence improve the prospects for the populace. Some opinions dispute whether cause and effect are linked in this manner and assert action will harm the population by depriving many of a livelihood in mining. However, in a speech on 4th September 2013, European Trade Commissioner Karel De Gucht promised an "effective but reasonable" EU system to encourage responsible sourcing of conflict minerals. Although De Gucht did not set out a timetable, he did state that he hoped the form of action will be decided by the EC "before the end of the year" (2013).

Map of Africa showing the conflict minerals region - DRC and adjoining countries

"Blood Minerals"

The minerals at risk yield the metals tantalum, tungsten, tin and gold (sometimes abbreviated to 3TG or "blood minerals") although, under the US Conflict Minerals Law, any mineral sourced from the region can be included. If the EC follows the US model, which is based on Dodd Frank Section 1502 and OECD guidance, it will place the onus on all companies that have these metals in their products to provide independent traceability audits and make an annual disclosure. This applies even if the company did not undertake the additive step; the metal merely needs to be present in a supplied part or component. In his speech, De Gucht indicated that the EC would focus its approach on smelters, with incentives on the upstream companies to perform due diligence. However, there are unsubstantiated reports that De Gucht may be considering regulations that would require a customs-based conflict minerals declaration for everything brought into the EU.

Protecting your supply chain: Substitute, Collect, Recycle

The alternatives to using conflict minerals depend on the application but, for the ICT industry, fundamentally reduce to the choice between substitution and recycling:

- Tantalum is used primarily for high performance capacitors. Functional substitution is possible by aluminium electrolytic capacitors, sometimes in parallel with other types of capacitor to obtain the required electrical characteristics, but not in the same footprint or precision of value. Tantalum is not recovered from electronic scrap because its low concentration makes it uneconomic. Using current recycling technology, development of automatic vision-systems to identify and remove tantalum capacitors from stripped circuit boards is required to produce a waste stream of sufficient concentration to be worth processing.

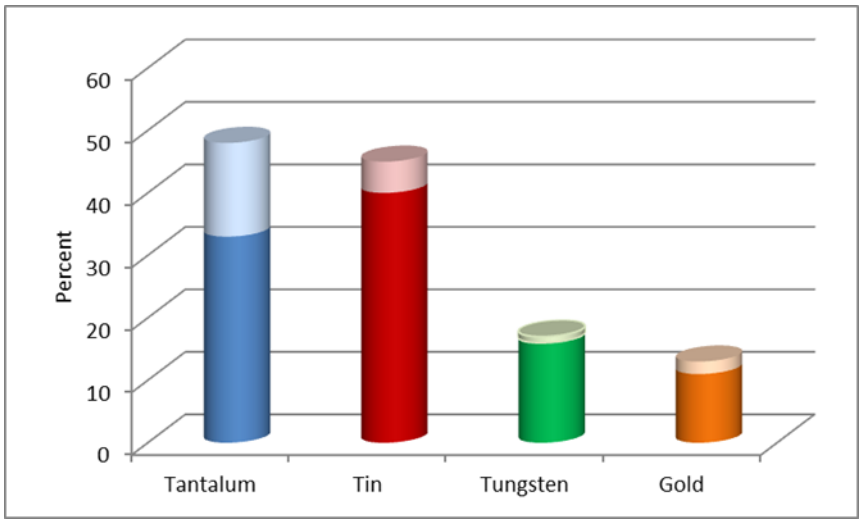
- Tungsten has a plethora of uses, but by far the largest is as tungsten monocarbide, which is used for the vast majority of cutting and shaping tools. Substitutes exist but often have inferior properties, particularly in terms of shorter product life. Tungsten and its monocarbide are easily recycled from most product forms and collection rates are currently around 30%. Higher rates should be achievable through education that it is the tool tip and not the shank that should be set aside for recycling.

- Tin is essential for 'tin cans' and is the prime constituent of all solder used to populate electronic circuit boards. Tin cans could be substituted by other package formats, although not at the same price point. Substitution of tin in solder would be a very long proposition – following environmental concerns raised in the 1990s, it has taken 20+ years to replace the lead in solder and even today the transition is not complete. Fortunately there exist established industries to recycle both tin cans and tin in electronics. New technologies to boost the recovery rate and minimise the loss of material to the general waste stream would reduce the need to mine new tin. This may ultimately benefit countries like Indonesia where illegal inshore mining has damaged coral reefs.

- Gold continues to be the metal of choice for jewellery and this application is its major use. Once coinage and currency reserves are added to jewellery use, only about 12% of mined gold is used in industrial applications. Industrial gold is often deposited as a thin surface layer but, despite the distributed nature of the deposit, the high price means it is still often worth mining industrial waste streams to recover the metal. For example, a typical smart phone contains 0.01-0.03g of gold, which is a far higher concentration than in mined ore and the inherent inertness of gold makes recovery relatively straightforward. Functional substitutes are often available for gold, for example nano-nickel alloys for circuit board connectors, but require more advanced technologies to deposit so can have difficulty displacing gold. A considerable quantity of industrial gold is currently lost to the general waste stream through careless disposal of WEEE (waste electrical and electronic equipment). However recent EU Directives on WEEE mandate that there will be a steady increase in collection rates, and hence of gold and tin recovery over the next few years.

Traceability – how effective is it?

One of the issues of conflict metals is traceability. In mineral form it is relatively easy to determine where a particular sample was mined since every reserve has a unique fingerprint of trace impurities that is difficult to obscure or counterfeit. The mineral therefore acts as its own trace auditor in a far more reliable manner than any paper trail. After reduction to metal and refining to high purity, this traceability is lost. For gold the problem is compounded because this metal is also a form of traded money and there is total disconnect between paper ownership and physical ingots.



Percentage of conflict metals used in the electrical/electronic industry, the stacked portion being obtained from the DRC region (2012). Source: Oakdene Hollins

Benefits of Supply Chain Analysis – Choosing the right option

Materials selection and its management through the supply chain and product life is a complex subject that reaches far beyond the usual customer-supplier relationship boundaries. Oakdene Hollins specialises in analysing the risk to businesses from resource depletion, geo-political influences, conflict minerals, WEEE legislation and the like. Having identified vulnerabilities in a supply chain, we work with companies to analyse the merits of various substitution and mitigation options. We are well placed to advise on strategy as Oakdene Hollins provides EU and UK government organisations with the evidence base that drives many policy decisions. For example, on behalf of the European Commission we are currently revising the EU's Critical Raw Materials list, due to be published in January 2014.

Sustainable manufacturing, including avoiding conflict minerals, is often seen as a burden and cost to business. However numerous examples demonstrate that - when correctly leveraged - it can deliver competitive advantage together with more secure and resource-efficient supply chains and corporate social responsibility benefits. We would be delighted to discuss any aspect of our work with you.

Background to this report:

This summary report has been produced based upon the results and insights gained from research for various public and private sector clients such as the European Commission, UK Government and private companies. Oakdene Hollins' research has covered all stages of the supply chain including exploration, mining, refining, use and recycling.

Examples of our work include:

- Product supply chain risk analyses, such as for retailers
- Strategic commodity studies for major mining companies
- Evaluation of by-product metals from mining and refining
- Waste management and recovery technologies
- Advice on clean-technologies
- Materials criticality studies

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