

## ***Why cyanide-based precious metal mining should be banned in Europe***

by Daniel Popov, Maria Kadoglou and Stephanie Roth<sup>1</sup>

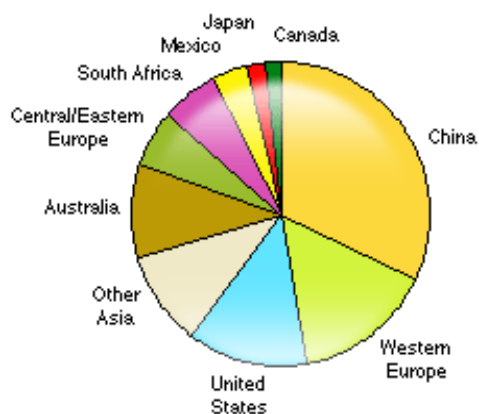
### **Background:**

**Cyanide** is a compound composed of carbon and nitrogen. It is highly poisonous both in the form of a gas (hydrogen cyanide) and a salt (sodium cyanide). The extreme toxicity of cyanide even at low doses arises from its readiness to react with other elements and hence interfere with normal biological processes. Free cyanide as used in precious mining is the most toxic form, with instant and acute effects, leaving little residual trace.<sup>2</sup> Cyanide gas is a biological weapon and was notoriously used in the Nazi death camps of World War II. The mining industry likes to point out that cyanide occurs naturally in low doses i.e. in bitter almond nuts, but this observation has no relevance in relation to large scale cyanide use in metal mining.

### **Context:**

The precious metal mining industry uses **sodium cyanide** to isolate gold/silver. The industry is the main sodium cyanide consumer worldwide, using 180,000 tonnes annually, or 75% of total annual production. The world's major sodium cyanide producers include DuPont, CyPlus, Cyanco, Australian Gold Reagents, and Orica. Producers in the Republic of Korea and China follow closely behind.<sup>3</sup>

**World Consumption of Sodium Cyanide—2009**



Source: **Sodium Cyanide**, Bala Suresh & Takashi Kumamoto, published by SRI Consulting, January 2010.

- As a result of the rise in gold prices the sodium cyanide market has changed. Precious metal mining companies have been investing in new exploration projects, as well as prolonging activity at mines that had been winding down. This has resulted in increased demand for sodium cyanide.
- In Europe, cyanide-based precious metal mining is currently practiced at two mine sites: in Sweden (by *Boliden*<sup>4</sup>) and in Finland (by *Agnico-Eagle's*<sup>5</sup> Kittila). The *Rio Narcea* gold mines in Spain which are now owned by *Lundin Mining Corporation* closed in 2006.
- Several mainly Canadian mining companies are now proposing exceptionally large-scale open-pit cyanide-based gold/silver mining operations in inhabited areas along the Carpathian Mountain chain and its outlets (Slovakia, Hungary, Romania, Bulgaria and Greece).

### **Sodium cyanide's legacy in mining:**

In mining, sodium cyanide is used to separate gold/silver from crushed ore. Problems occur during the transport of the cyanide when trucks have accidents on bad and winding roads, or when there are breaks in the walls of tailings ponds, such that cyanide enters watercourses. Mine accidents involving cyanide spills result in devastating ecological effects. Typically, cyanide kills all life in the streams it enters for a considerable distance.

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<sup>2</sup> <http://www.greenpeace.org/raw/content/seasia/en/press/reports/cyanide-gold-mining-s-devasta.pdf>

<sup>3</sup> **Sodium Cyanide**, Bala Suresh with Takashi Kumamoto, published by SRI Consulting, January 2010. See

<http://www.sriconsulting.com/CEH/Public/Reports/770.9000/>

<sup>4</sup> <http://www.boliden.com>

<sup>5</sup> <http://www.agnico-eagle.com/Our-Business/Operating-Mines/Kittila/default.aspx>

For example, an accident at a gold processing plant at Baia Mare in Romania in 2000 resulted in a major cyanide spill. Heavy snow followed by rain caused a tailings dam to break and large volumes of mine-waste slurry and cyanide entered the river system. The contamination continued into the Danube, a major river in Eastern Europe flowing through many countries to the Black Sea. Extensive fish kills from the cyanide were reported, not only from Romania but also from other countries downstream of the spill. Four weeks after the accident the cyanide plume was still measurable in the Danube Delta, some 2,000km from the spill source. Although an emergency response team worked constantly to repair the dam, enough cyanide was released during the spill to cause a major ecological catastrophe along the Tisza and Danube rivers. The spill killed over 1,200 tonnes of fish and hence endangered birds feeding on fish within a national park.<sup>6</sup> In Hungary, the spill was reported to have caused a five kilometer carpet of dead fish and left a quarter of the population without drinking water. There were also adverse impacts on local communities, economies and also tourism, all because of the lack of a fishing industry.<sup>7</sup>



While the damages that the accident caused to Romania's population and its environment were never acknowledged by Romania's government, mining spills from this site have since occurred on an almost yearly basis.<sup>8</sup>

Since the Baia Mare disaster, at least 25 reported accidents involving cyanide spills occurred at mining sites around the world.<sup>9</sup> Two of these accidents occurred at mine sites that are operated by companies who are signatories to the International Cyanide Management Code, a voluntary initiative for the gold mining industry intended to reduce the incidents of accidents such as cyanide spills.

### **Civil Society Response:**

The Carpathian Mountain chain and its outlets are resource-rich. Over the past ten years several mining companies, mainly Canadian-owned, have been developing proposals for large-scale, cyanide-based gold/silver mines in Slovakia, Hungary, Romania, Bulgaria and Greece. None of these mines are currently operating and at the time of writing none of them have been granted environmental accords. Permission to use cyanide is granted within the environmental accord.

<sup>6</sup> UNEP/OCHA 2000a, b.

<sup>7</sup> UNEP/OCHA 2000a, b.

<sup>8</sup> <http://www.bancyanide.ro>

<sup>9</sup> <http://www.wise-uranium.org/mdaf.html?ref=itqk.com> and

<http://www.greenpeace.org/raw/content/seasia/en/press/reports/cyanide-gold-mining-s-devasta.pdf> and

<http://www.rainforestinfo.org.au/gold/spills.htm>



★ Location of major Gold deposits ● Porphyry Gold/Copper deposits found along Eastern Europe's Carpathian Arc.  
 ● Carpathian License  
**Location of major gold deposits**  
 source: Carpathian Gold

The proposals share several characteristics:

- Large-scale installations with open-pit mining and the use of cyanide.
- Situated in areas where mining took place historically; some being billed as 'Recultivation' initiatives. This means that private mine operators receive permission to mine providing they deal with old state-owned mine sites, thus removing that responsibility from the state.
- Situated in densely inhabited areas or/and close to large towns.
- Some involve involuntary resettlement.
- Situated close to important cross-boundary waterways.
- Project footprint overlaps with cultural and natural monuments.
- Contested by local residents and/or non-governmental organizations.

### **EU Regulations:**

In response to the Baia Mare accident, the EU adopted the Mining Waste Directive (MWD) in November 2005. It is a weak legislative instrument<sup>10</sup> due to intensive lobbying<sup>11</sup> on the part of the precious metal mining industry, plus concerns expressed by resource-rich CEE countries. Implementation has also been weak. In Bulgaria for example the transposition of the Directive into Bulgarian law was simply postponed to 2018. Permitted cyanide levels in Bulgaria are currently 25 parts per million (ppm) while the EU MWD sets a maximum of 10ppm. This is a matter for particular concern given that a Canadian mining company, Dundee, is now proposing two large cyanide-based gold/silver mine operations in Bulgaria (at Krumovgrad and Chelopech). Both locations are densely inhabited with Krumovgrad laying along the Martiza River which feeds cross-boundary into Greece.

To put the 10ppm standard in context, an accidental cyanide discharge of just 1ppm into the river Trent in the United Kingdom in October 2009 led to a fish kill that affected 20 miles of the river. The cyanide killed the bacteria used at a nearby sewage treatment works and a combination of ammonia and cyanide killed thousands of fish.<sup>12</sup> Under the MWD permissible cyanide levels are ten times higher.

Another major shortcoming of the MWD is that it does not address cyanide emissions to the air that result from mining operations. Canadian mining company Gabriel Resources has proposed a 13 million tonne per year mine at Rosia Montana in Romania, which would require the use of 13-15 million kilograms of cyanide per year, with more than 130 kg of cyanide emitted into the air every single day during the 16 year mine life.<sup>13</sup> There is currently no EU legislation that regulates such cyanide emissions into the air.

<sup>10</sup> [http://www.eeb.org/activities/waste/mining\\_waste/MWD-conciliation-briefing-WWF-EEB-101005.pdf](http://www.eeb.org/activities/waste/mining_waste/MWD-conciliation-briefing-WWF-EEB-101005.pdf)

<sup>11</sup> <http://www.cabinetstewart.com/services/contact-builder.html>

<sup>12</sup> <http://www.guardian.co.uk/uk/2009/oct/07/pollution-river-trent-investigation> and

<http://www.thisisstaffordshire.co.uk/animals/Search-begins-life-River-Trent/article-1420759-detail/article.html>

<sup>13</sup> Annex to the EIA, Gabriel Resources, page 68 of volume 62 (English version) at <http://www.mmediu.ro>

It should come as no surprise that all EU member states faced with cyanide-based mine proposals have civil society groups that oppose such projects. In Slovakia opposition<sup>14</sup> to Canadian company Tournigan's<sup>15</sup> Kremnica proposal resulted in the passage of a law whereby a mine proposal may only go ahead if it has the support of the local government. Opposition to Carpathian Gold's<sup>16</sup> proposal in Hungary led to a ground-breaking law banning cyanide-based metal mining. According to a professional opinion poll carried out in December 2009, 75% of Hungarians polled supported a ban.<sup>17</sup> Opposition to Gabriel's Resources<sup>18</sup> Rosia Montana development has led to multiple lawsuits, and to a large civil society campaign supporting a Parliamentary bill to ban cyanide-based mining.<sup>19</sup> According to a professional opinion poll carried out in 2008, 67% of Romanians support such a measure.<sup>20</sup> Faced with litigation cases and campaigns brought forward by civil society groups in Bulgaria,<sup>21</sup> Canadian mining company Dundee<sup>22</sup> announced in spring 2010 that it would consider the re-development of the Krumovgrad proposal, this time without the use of cyanide. In Greece none of the large-scale precious metal mining proposals<sup>23</sup> have been developed due to litigation and the vehement opposition of directly affected communities.<sup>24</sup>

**Alternatives to cyanide and a few words about gold recycling:**

Feasible alternatives to cyanide-based gold/silver mining exist<sup>25</sup>, but they are not favoured by the mining industry because cyanide is the 'cheapest' option, providing that companies can offload the risks on to the environment and the public.

At the same time gold recycling is increasing within the EU. Swedish miner Boliden produces approximately 15 tonnes of gold every year, with approximately two thirds coming from the recycling of metal and the remainder coming from cyanide-based gold mining.<sup>26</sup> The Belgian company Umicore<sup>27</sup> has moved out of the mining business and now focuses solely on reclaiming and recycling metals. It employs 13,720 people and in 2009 had a turnover of €6.9 billion. It extracts metals such as gold from toxic e-waste; from the mountains of unwanted televisions, computers and cell-phones that the EU public generates each year. The company describes its work as "aboveground mining." Umicore produces 30 tonnes of recycled gold each year, from a tiny fraction of the mobile phones that are discarded.<sup>28</sup> Just this one Belgian company is producing nearly twice as much gold per year as Gabriel Resources intends to produce by blowing apart the Transylvanian mountains of Rosia Montana.

The choice for Europe is clear. We can choose to lead the world in the recycling technologies of the 21<sup>st</sup> century, thereby creating tens of thousands of green collar jobs, or instead to allow Canadian mining companies to dynamite landscapes; threatening groundwater, river systems, and wildlife and human health in many member states. The EU needs to act now, before these projects can be initiated. This is why we call on the European Parliament to **BAN CYANIDE-BASED PRECIOUS METAL MINING.**

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<sup>14</sup> <http://spectator.sme.sk/articles/view/21925/3/>

<sup>15</sup> <http://www.tournigan.com/s/home.asp>

<sup>16</sup> <http://www.carpathiangold.com>

<sup>17</sup> <http://cianmentes.org/>

<sup>18</sup> <http://www.gabrielresources.com>

<sup>19</sup> <http://www.rosiamontana.org>

<sup>20</sup> [http://www.bancyanide.ro/index.shtml?x=2854&cmd\[97\]=c-1-0ddccbbb66ade42214624fc253ced3e3&cmd\[123\]=x-123-2640](http://www.bancyanide.ro/index.shtml?x=2854&cmd[97]=c-1-0ddccbbb66ade42214624fc253ced3e3&cmd[123]=x-123-2640)

<sup>21</sup> <http://bankwatch.ecn.cz/project.shtml?apc=147581-1904290---1&x=2207300&d=r>

<sup>22</sup> <http://www.dundeeprecious.com>

<sup>23</sup> <http://www.mmpindia.org/greece.PDF>

<sup>24</sup> <http://antigoldgreece.wordpress.com/>

<sup>25</sup> <http://www.serconline.org/mining/faq.html>

<sup>26</sup> [http://investors.boliden.com/files/press/boliden/Boliden\\_Annual\\_report\\_2009\\_en.pdf](http://investors.boliden.com/files/press/boliden/Boliden_Annual_report_2009_en.pdf)

<sup>27</sup> <http://www.umicore.com/en/>

<sup>28</sup> <http://www.nytimes.com/2008/01/13/magazine/13Cellphone-t.html>