Industrial Minerals review 2019

2020 Vision for Industrial Minerals

by Mike O'Driscoll*

Writing this mid-May sees the world still grappling with the impact of the COVID-19 pandemic, which will continue to affect mineral operations and consuming market sectors for the next few months, if not the remainder of the year, and a global economic recession is more than likely.

China was already getting back on track by mid-March, albeit initially hampered by internal logistics restrictions, and by July and August it is hoped that lockdown restrictions will have eased for most western operations.

Regarding market demand, right now it is a mixed bag: with some sectors undergoing a dramatic decline (e.g., oilfield — drilling minerals), others suffering what is hoped to be a temporary dip (e.g., steel — refractory, flux minerals; construction — building materials, glass minerals), while a few are actually seeing a boost (European Union do-it-yourself market (popular in lockdown) — paint minerals).

That said, as most companies have now taken action or are readjusting accordingly; they are beginning to take stock, look ahead and strategize for their emergence on the other side of this crisis.

If anything, the ramifications of the COVID-19 pandemic has put into sharp focus certain trends which were already emerging for the industrial minerals sector, as well as salient reminders as to their overall importance to industry and everyday life. These factors could, and should, shape the industry for the better going forward.

Industrial minerals are essential — it's official. In response to the COVID-19 lockdown, on March 19, 2020, then updated March 28, 2020, the U.S. Cybersecurity & Infrastructure Security Agency (CISA) classified a range of industrial sectors as "essential critical infrastructure," many of which rely on the supply of industrial minerals.

The subsequent CISA update then included industrial minerals in their own right. This was a welcome result for U.S. industrial minerals operations but also a solid message to the populace and government as to the important role of industrial minerals in supporting the economy (similar decisions were rolled out in other countries re: mineral operations).

Hopefully this will help support plans for future mineral projects and increase investors' (and the public's) recognition and confidence in the value of industrial minerals.

Perhaps the single most obvious factor that emerged from the start of the crisis was the world's (over-)reliance on sourcing minerals (and many other items) from China.

It had happened a few times before: during the SARS outbreak of 2003, the Beijing Olympics of 2008, and most recently the 2017-19 anti-pollution drive (continuing) within China, but this time the impact has been felt deeper and wider and, crucially, perhaps for a longer term.

The subsequent New Year clampdown on movement within China paralyzed mineral supply to global markets during the first quarter of 2020 from the world's largest industrial mineral exporter.

Mineral consumers in the West, particularly refractory and ceramic manufacturers, became very short on stock and needed all their lateral thinking powers to secure alternative and sufficient raw material supplies from elsewhere.

China is supremely gifted with large natural resources and commands a dominant position in world supply of industrial minerals. In value terms, China accounts for nearly US$4 billion or 8 percent of global industrial mineral exports, representing at least 68 Mt.

Of significance is China's leading role in world exports of key industrial minerals including graphite (60 percent), magnesias (57 percent), barite (36 percent), mica (35 percent), limestone (25 percent), quartz (23 percent), fluorspar (16 percent) and vermiculite/perlite (10 percent).

After Japan, the United States is China's second largest export market for industrial minerals (other primary market destinations are Europe (via the Netherlands) and Asia — South Korea, Taiwan, India and Indonesia.

In 2019, according to the U.S. Geological Survey (USGS), the United States had an import reliance of ≥20 percent for some 28 industrial minerals, 23 of which the United States was ≥50 percent import-reliant.

Of the 28 minerals, the majority (20) were imported from China, 16 of which the United States was ≥50 percent import-reliant. These include minerals, and some termed critical, on which the United States is 100 percent reliant: bauxite, fluorspar, graphite, mica, rare earths, scandium and yttrium.

Additional minerals from China on which the United States is ≥50 percent import-reliant include barite, antimony, fused alumina, garnet, silicon carbide, diamonds, iron oxide pigments and magnesia.

The upshot is that United States and world consumers of these Chinese minerals suffered supply shortages March to May at the least, and perhaps through to June/July as mines, plants and transport networks slowly got back to business (although western demand sharply dropped as E.U./U.S. manufacturers entered lockdown).

This latest impact on Chinese mineral supply, and coming straight after the (ongoing) ramifications (i.e., mine/plant closures) of domestic pollution control instigated in 2017, has further exposed global markets' somewhat risky high import reliance on China and revived the drive to seek alternative sources of supply.

The situation has forced an entire rethink and assessment of adapting to alternative options in global mineral supply chains.

And this is not just restricted to exploring for and evaluating alternative mineral sources, but also in logistics, working practices, sustainable development, recycling, increased remote online/digital methods — and some most likely for the better.

Indeed, the industry may go from temporarily adapting to permanently adopting some of these measures for more efficient and secure working in the future.

Security of consistent supply — in terms of both volume availability and desired quality — for industrial mineral consumers is imperative.

There is now much talk of an economic decoupling of China from traditional supply chains by some countries and the next few years may see a major change in mineral sourcing options.

With this latest stimulus, the start of the 2020s may well herald a surge in global mineral project development, especially in critical minerals, in order to lessen markets' reliance on China's mineral resources.Along with this quest for alternative sources to China will be a boost for the already fast-evolving mineral recycling sector.

According to European Commission research, global raw-material extraction has grown 14 times from 6 Gt in 1900 to 84 Gt in 2015, with the sharpest increase in industrial minerals at 45 times.

Global resource extraction was projected to increase 119 percent from 2015 to 2050, to 184 Gt in total, including an estimated increase in industrial minerals extraction of 168 percent. Sustainable development and increased recycling will come to the fore.

Industrial waste resources will soon emerge as the new alternative mineral resource and eventually become the new normal supply chain option for mineral consumers.

Not only will more recycling processors emerge, but also we may begin to see more primary mineral mining producers involve themselves with recycling tailings and other waste sources in order to offer a wider range of products with very much a welcome green tinge to their portfolio.

Key among the evolving new supply chains incorporating more recycling will be a drive to change product formulations to permit easier end-of-life recyclability, better harmonization of waste legislation to help logistics, increasing economic alliances between waste sources and recyclers and investment in suitable processing and accurate sorting technology.

All we can do is to stay calm, stay well and create new solutions and opportunities in adapting to new mineral supply options. ■

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Editor's note: Throughout this review, all measurements are expressed as metric units.

ANTIMONY

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Native antimony metal is rare and antimony generally occurs together with gold, lead, copper and silver. There are more than 100 antimony minerals, although the sulfide mineral stibnite is the main economic mineral.

Antimony is mostly consumed in flame retardants (nonmetallurgical antimony) and lead-acid batteries (metallurgical antimony), accounting for 81 percent of antimony demand in 2019. Consumption trends in these two critical applications for antimony thus shape overall demand dynamics. In both cases, a similar situation prevails: while overall demand (for flame retardants and lead-acid batteries) has been steadily increasing, the antimony loading within these applications has been reducing. In flame retardants, this was mainly because of high antimony prices prompting substitution for antimony, and more recently legislative requirements forcing changes to flame retardant formulas. In batteries, lead-calcium-tin alloys are increasingly being used instead of antimonial lead in battery grids for sealed-for-life, maintenance-free automotive batteries, also called valve-regulated lead-acid (VRLA) batteries. Other end uses include plastics and heat stabilizers, ceramics and glass (specifically solar panel glass) and a variety of metallurgical applications.

Antimony enters the supply chain either as a result of mining (primary production) or recycling (secondary production). For secondary antimony, antimonial lead is produced in a number of countries, mainly in secondary lead smelters. The antimony recovered from this product is mainly recycled back into metallurgical applications. Because of the declining demand for antimony in lead-acid batteries