

Hello to the Good-'Buy' Metals

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DETROIT (ResourceInvestor.com) -- A spectre is haunting the U.S. economy, the spectre of the imminent possibility of the total loss of domestic self-sufficiency in a growing list of critical natural resources. The United States federal government seems to be suffering from a kind of bipolar disorder when it comes to acting upon the very recommendations of the National Academies, which it, the government, has sought out and for which the Congress has funded ongoing studies. It even looks as if Congress is ignoring common sense.

Both, the NA studies and common sense, tell us that in the last 25 years and more the U.S. has become increasingly dependent on imports for many critical and strategic metals and minerals for industry and for our military, which were, and could be again, produced domestically. This situation we are told by politicians and bankers is painful, but temporary, and a necessary part of a globalization, which we are assured, is in fact a triumph of free market capitalism. This is nonsense on stilts, a phrase I am borrowing from the political pundit, Megan McCardle who used it in another context.

I wrote a synopsis last October about the two reports, one covering critical industrial demands and the other of those on the military demand for specific metals and minerals in the production of which the U.S. is not self-sufficient. Those reports were issued by the National Academies that month to inform and warn the Congress of the consequences of inaction. Investors in domestic American industry and innovative technology must watch carefully which natural materials any industrial company, or any innovation in technology, requires for its operation or implementation, because if those natural materials are critical and not produced domestically then the investment carries a high risk of failure. For that reason, for example, I would not invest today in any company attempting to produce devices requiring rare earth based magnets in the U.S.

The loss of domestic self-sufficiency in a natural resource such as in rare earth metals is today, typically, a total loss thus giving foreign competition the ultimate competitive advantage; they can shut down their American competitors, or force them to move most or all of their operations, technologies, jobs and most of their profits to China, for example, simply by cornering a critical raw material. The Chinese have already done this with the production of small high strength magnets by controlling 100% of the supply of the rare earth metals, neodymium and samarium. In the case of rare earth metals the move to China was due to the success of an agenda, predatory pricing of a commodity to extinguish its production domestically, followed by, first, large and then continuing price increases for export material from the new dominant source country, which would have been illegal if carried out by a domestic American company in the U.S.

The success of this agenda in North America has destroyed our domestic rare earth producer industry almost completely. Interestingly enough it was announced just today that the revival of the North American tungsten mining industry, after North America's largest producer, Canada's North American Tungsten was bankrupted earlier in this decade by Chinese predatory pricing, has now been recognized as a success by China. China's largest tungsten producer, Hunan Nonferrous Metals Corp., was today revealed to be the buyer of a board enabling 9% interest in NTC. In the event of a shortage of tungsten in both the U.S. and China which nation's industry do you now think will get first crack at Canadian tungsten from NTC?

The loss of self-sufficiency in natural resources is a big factor in the decline of the U.S. dollar; the decline and relocation to foreign countries, with the required natural resources, of U.S. OEM heavy industry and its priceless and proprietary manufacturing technologies; the decline of the U.S. economy; and the steady erosion of the U.S.'s standard of living by commodity price inflation. While American financial 'experts' lament legacy costs it is, in fact, the loss of domestic supplies of critical natural resources that is the largest, yet overlooked, factor in the decline of the competitiveness of American industry, even if American journalists, politicians, Wall Street bankers, OEM heavy industry CEOs and academic economists don't seem to understand it.

America's OEM heavy industry isn't unique in the world in succumbing to predatory pricing, and the subsequent decline of the domestic natural resources industry, but America is unique in not recognizing the problem and moving to rectify it. Simple solutions such as stockpiling critical metals, encouraging and subsidizing the development of environmentally state-of-the-art domestic mining, and forbidding, or at least restricting the export of critical material bearing scrap without it first being offered either to the national stockpile or to domestic end users, an agenda which every industrial nation in Asia is now already doing, including, and, in particular, Japan, Korea, India and China, seems to be beyond the courage of our elected officials to even discuss publicly, much less support or mandate by law, in the face of assured opposition by the economically clueless or uncaring.

So, we are saying goodbye to more and more metals, which we will buy back much more expensively if we can get them at all.

I want to now propose an agenda whereby the U.S. can reverse, and hopefully eliminate, by taking logical steps, its economically disastrous contemporary dependence on foreign producers for a critical group of metals and minerals; i.e., those metals and minerals, which can either be produced here, or which can be recycled domestically.

Everyone agrees, of course, that recycling is good, but that's where the agreement stops.

The recycling of paper and plastics, which gets 100% of the attention of the mainstream press and the political class at all levels of government, is meaningless economically.

The recycling of critical and strategic minerals is a hugely profitable business carried out, at the collection and sorting level, beneath the notice of the public by an industry, portrayed, if at all, in the entertainment media as a group of lower class merchants who dress as and call themselves 'junk' dealers and whom we seem to regard as a large number of Sanford & Sons. The mainstream economic press simply ignores this industry altogether as if it did not matter to the country's economic life.

Nothing could be farther from the truth. In fact the steel industry in the U.S., the paragon of global heavy industry, is by its direct dependence on ferrous scrap divided into two segments, one uses blast furnaces fed with pure oxygen, iron ore and the minerals used to reduce the iron ore first to molten iron and then, by alloying in other raw materials, to steel, and the other, uses electric arc furnaces (EAFs), which work by melting high quality scrap steel and iron with an electric arc and adding alloying additives to make high quality steel. The U.S., the world's largest producer, per capita, of electric power, has always also been the world's premier source for high quality ferrous (iron based) scrap, so it was here that the EAF first became dominant.

Steelmaking is hugely expensive in capital equipment and its demands for energy and water, so accidents and shutdowns must be avoided. Therefore steel makers insist that the ferrous scrap they buy be pre-graded so that it contains no unknown elements or compounds or materials that can compromise or shut down their furnaces.

Therefore scrap dealers add the most value to the scrap they buy from industrial producers by sorting or 'processing' it and then delivering the graded material most profitably by packaging it in 'bundles' of known composition, weight and dimension.

For example, many American 'scrap-yards' process automobile bodies by passing them through immense machines that shred and fragment the bodies and separate them mechanically, gravimetrically, and electromagnetically into steel, aluminum, plastics, and 'fluff.' The steel so recovered and packaged in bundles is prized throughout the industrialized world as Number One Fragmented grade.

As the prices of non ferrous metals have climbed in the current commodity super-cycle more and more components on the auto bodies being scrapped are being hand sorted, i.e. removed by hand and set aside where they all used to just go into the steel.

Some such components are being rebuilt and sold in the U.S. to repair shops and do-it-yourself repairmen, but most are going overseas to places like China where they are eagerly 'reconditioned' and sold into a bottomless pit of local or regional need. If the parts are beyond redemption then they are hand disassembled to recover the now precious copper and aluminum, for example, in automotive starter motors. On the disassembly line in China the automotive starter motors will join million of electric motors that started out in the U.S. in washing machines, dryers, construction machinery, machine tools, bread mixers, and so forth and so on where the copper and aluminum in them will be recovered for reuse and probable resale to American end users who will now be paying Chinese companies the full price at today's market for copper that went to China by being purchased as relatively low priced scrap.

The nickel from rechargeable batteries if it is to be reused to make new batteries goes to China as scrap for that specific re-use. Otherwise the battery nickel and its expensive additives are simply thrown into Canadian nickel furnaces to make a lower grade ferronickel for steel making and the expensive and rare additives are measured and noted as 'contaminants.'

One more example out of many: The platinum, palladium and rhodium (PGMs) used to make automotive emission control catalytic converters were until fairly recently as likely to go through the shredder with the steel as they

were to be removed beforehand. In 1989, a company of which I was a part bought 8,000 scrap catalytic converters a month for an average price of less than \$13 each; last summer a scrap dealer I know bought 500 cats for an average price of \$100 each from a 'collector' of such specialized materials; yesterday the price of that same collectors cats, unopened, i.e., unprepared, was \$160 each. Well, you say, that just reflects the rising prices of PGMs. Yes and no.

Catalytic converters collected in the U.S. will overwhelmingly go to the Republic of South Africa where they will be utilized as a high grade type of feed into the furnaces of the primary PGM miners there. A significant portion is also just now going to Belgium to the world's largest specialty metal recycler, Umicore. A small proportion gets recycled in the U.S. or Canada by either a specialized PGM smelter in Alabama or a nickel refinery in Ontario. Only a tiny amount of new platinum and no rhodium at all is produced in the U.S., but Canada produces 10% of the world's palladium, and an American mine in Stillwater, Montana, produces a small amount of palladium, but that mine is owned by the Russian nickel giant, Norilsk, which is also the world's largest producer of palladium.

You cannot build a car with an internal combustion engine fuelled by gasoline or diesel fuel in North America unless it is equipped with a catalytic converter that uses either platinum or palladium and always has rhodium.

Why do American car companies not recycle their own rhodium? If they did so then the cost would be the original cost minus the losses in recycling plus new make-up material bought at market or if on long term contract then perhaps bought at a discount to current market. Even better, if they recycled their own PGMs then they could never be shut down by an accident or a power failure in South Africa. I note that the typical argument of the PGM miners that it takes an enormous investment and proprietary knowledge to recycle is put to serious doubt by Umicore's operations and perhaps by the coming Pro-Or process revolution, which may allow every rhodium (and PGM) user to recycle in-house or at least through a local contractor.

Recycling is not a noun it is an adjective. There is a different recycling process for each material to extract one or more of its components, and of course there first must be enough of the material on a regular basis to make the development of a recycling process economical and efficient.

Today many minor metals are not recycled because their individual uses are dissipative. This is true, for example, of germanium, indium, gallium, tellurium, and selenium used in electronic applications. These are truly good-bye metals, and any nation, which considers itself an industrial nation, must produce any or all of these metals domestically, if it can in order to ensure a supply for its own industries.

Some metals are just wasted. In this category go metals used as alloying additives in tool steels, for example, which are not separated by scrap dealers for selective upgrading and recovery or re-use. Although wastage is down it still accounts for a tragic amount of wasted tungsten, molybdenum, vanadium, and chromium each year in the U.S.

Finally many critical metals such as the rare earths, some nickel, and cobalt are simply given in the scrap stream with little or no charge for them to places like China where they are recovered for re-use, and if they are sold back to the U.S. as components of end products they come at full market price.

I can make a long list of metal values which flow out of the U.S. in the scrap stream or go to landfill in the U.S. even today without thought for their value or availability.

The U.S. manufacturing executive's mantra is always: "We make product, not scrap. We don't care what happens to the scrap. We just want it out of the way." This combined with the financial executive's mantra, "In a global free market you can get any natural resource if you are willing to pay for it," is the real reason for the decline of the U.S. as an industrial manufacturing giant.

I propose that the Congress instruct the National Academies to convene a public forum for the purpose of identifying the critical materials for industry and the military that are contained in the scrap stream, and that a national project be instituted and implemented to control the outward flow of critical metals and materials in the scrap stream to insure that they be utilized first by the American economy to reduce our need for imported metals and materials, and, in that, way to strengthen our economy.