

# HB 4227: Committee on Michigan's Mining Future

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Second Hearing: House Committee on Natural Resources and  
Outdoor Recreation  
Tuesday, April 16, 2019

# Why the Mining Bill?

The Per Capita Consumption of Minerals in 2018 totaled 40,631 pounds per person

Sources: US Geological Survey; Energy Information Admin; and U.S. Census Bureau

Per Capita Consumption of Minerals - 2018 (Pounds Per Person)	
Bauxite (Aluminum)	26
Cement	675
Clays	155
Coal	4,206
Copper	12
Iron Ore	256
Lead	12
Manganese	6
Natural Gas <sup>1</sup>	9,807
Petroleum Products	6,845
Phosphate Rock	182
Potash	42
Salt	384
Sand, Gravel, Stone	17,269
Soda Ash	34
Sulfur	67
Uranium	0.13
Zinc	6
Other Metals	23
Other Nonmetals	624
Total	40,631

## But is Mining Safe?

- More than three dozen federal environmental laws and regulations cover all aspects of mining.
- In addition, each state has laws and regulations that mining companies must follow.

# Federal Laws

- Some federal laws include:
  - National Environmental Policy Act,
  - Federal Land Policy and Management Act,
  - Clean Air Act, Federal Water Pollution Control Act (Clean Water Act),
  - Safe Drinking Water Act,
  - Resource Conservation and Recovery Act,
  - Comprehensive Environmental Response, Compensation, and Liability Act,
  - Toxic Substance Control Act,
  - Emergency Planning and Community Right-to-Know Act,
  - Surface Mining Control and Reclamation Act,
  - Rivers and Harbors Act, among others

## Why this bill now?

- Improved coordination among stakeholders is necessary for a coherent, competitive and sustainable future for mining in Michigan that minimizes environmental impacts
- Michigan does NOT have a direct reduced iron pellet needed for modern electric arc furnaces that are the way of the future, and which are necessary for recycling used steel

'To grow in this market, you have to get into DRI'

By LEE BLOOMQUIST/For BusinessNorth Jan 3, 2018



Peter Clevensline, Minnesota Department of Natural Resources Lands and Minerals assistant director of minerals, holds direct reduced iron.

Michigan does NOT invest in any research or development of palletization; Minnesota, Canada and Europe DO.

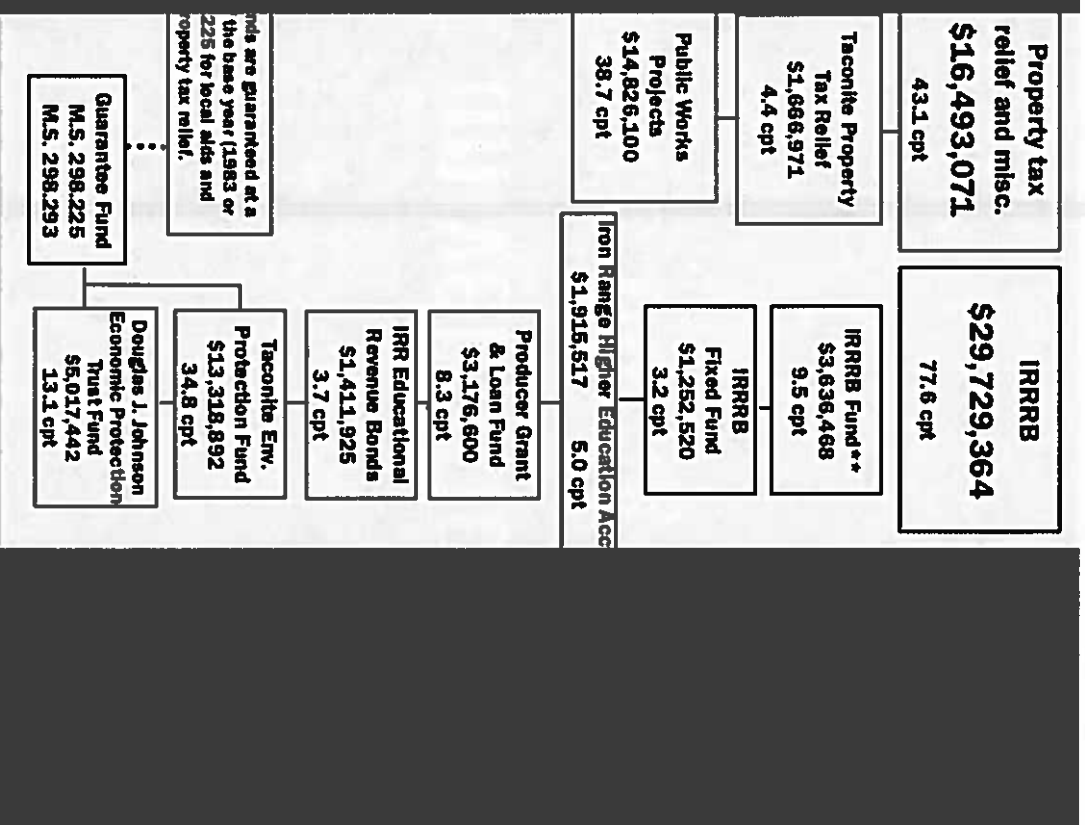


## **Taconite Economic Development Fund**

The Taconite Economic Development Fund (TEDF) is one way the agency supports our local mining industry which comprises over 30% of our regional economy. Each iron ore producer is eligible for a tax rebate of \$0.251 per ton of iron concentrate produced annually. The producer must match the tax rebate dollar for dollar. The Taconite Production Tax, paid by each mining company in lieu of property taxes, is based on the annual amount of tonnage plus chips and fines produced by each company. The TEDF Grant program funds operating or capital improvement projects that meet these goals. TEDF is a legislatively mandated program (Minnesota Statute 298.227).

# Michigan also doesn't have...

- An Environmental Legacy Fund like Minnesota
- Which could help address legacy mining contamination sites, such as the Stamp Sands in the Keweenaw Peninsula



**But check out what universities  
like Michigan Tech are doing:**



# Advanced Sustainable Iron and Steel Center

- Goals of research: lower energy consumption/reduce waste, reduce fossil fuel use and replace with renewable energy, utilize mineral processing waste products, capture pollutants before they enter the air or water

## ASISC

Academic Research for Industrial Interests:

The Next Generation of Sustainable and Economical Mineral Processing Technologies

**MichiganTech**  
Michigan Technological University

Chemical Engineering Department



# Phosphorus eaters: Using bacteria to purify Iron Ore

## Phosphorus eaters—Using bacteria to purify iron ore

September 13, 2017  Kim Geiger

 [Features](#), [News](#), [Research](#), [Research Features](#)



Many iron ore deposits around the world are extensive and easy to mine, but can't be used because of their high phosphorus content. Phosphorus content in steel should generally be less than 0.02 percent. Any more and steel becomes brittle and difficult to work.

# ReCell Center

- US Dept of Energy, in collaboration with MTU, launched its first Lithium-ion Battery Recycling Research and Development Center
- Aimed at creating national supply of recyclable lithium-based battery materials, spurring electric vehicle industry



Michigan Tech

## Michigan Technological University's Lei Pan Part of First DOE Lithium-Ion Recycling R&D Center

[Michigan Tech Home](#) > [News](#)

By [Kelley Christensen](#)

Published 3:00 PM, February 15, 2019



Graphite bubbles form during froth flotation, a technique used in mining engineering, which forces hydrophobic materials to the top as froth (in this case, graphite), and allows valuable cathode materials to sink to the bottom so they can be recovered and recycled.

# This can be funded through mining tax revenue

- *Minnesota's Mining Tax Guide...*

# 2017 Distribution of Production Tax

(Based on 2016 Production Year)

**Total Production Tax — \$96,516,727\***

Production Tax per taxable ton — \$2.659 Taxable tonnage — 33,524,393 tons.

<b>Cities and Townships</b> \$11,620,497 34.6 cpi	<b>School Districts</b> \$21,807,784 65.1 cpi	<b>Counties</b> \$12,131,699 36.2 cpi	<b>Property Tax Relief and Misc.</b> \$11,296,703 33.7 cpi	<b>Iron Range Resources &amp; Rehabilitation (IRRR)</b> \$38,769,693 115.6 cpi	<b>Other</b> \$890,351 2.7 cpi
<b>City and Township Mining &amp; Coal Fund**</b> \$1,940,927 5.8 cpi	<b>Taconite School \$0.133 Fund**</b> \$1,423,998 4.2 cpi***	<b>Regular County Fund**</b> \$7,564,487 22.0 cpi	<b>Taconite Property Tax Relief</b> \$11,296,703 33.7 cpi	<b>IRRR Fund**</b> \$3,241,899 9.7 cpi	<b>Taconite Economic Development Fund</b> \$700,000 2.1 cpi
<b>Township Fund</b> \$1,089,757 3.2 cpi	<b>Regular School \$0.2472 Fund**</b> \$9,173,173 27.4 cpi***	<b>County Fund and Bridge Fund**</b> \$3,982,835 11.9 cpi	<b>IRRR Tread Fund</b> \$1,252,520 3.7 cpi	<b>IRRR Higher Education Acct.</b> \$1,676,219 5.0 cpi	<b>Range Association of Municipalities &amp; Schools**</b> \$123,303 0.4 cpi
<b>Taconite Municipal Aid**</b> \$3,952,563 17.8 cpi	<b>Taconite Railroad \$1,106,935</b> 3.3 cpi***	<b>Taconite Railroad</b> \$784,377 2.3 cpi	<b>IRRR Grant &amp; Loan Fund</b> \$2,937,302 8.7 cpi	<b>Producer Grant &amp; Loan</b> \$2,937,302 8.7 cpi	<b>Hockey Hall of Fame</b> \$67,048 0.2 cpi
<b>Taconite Railroad</b> \$591,142 1.8 cpi	<b>Building Maintenance Fund</b> \$1,296,339 3.9 cpi		<b>Educational Revenue Bonds</b> \$3,992,134 11.9 cpi		
<b>Minling Electric**</b> \$1,634,030 4.9 cpi	<b>Taconite Referendum**</b> \$6,178,596 18.4 cpi		<b>From Range School Cents. &amp; Cooperatively Operated School Account</b> \$5,860,104 17.5 cpi		
<b>Special City/ Township Fund</b> \$157,055 0.4 cpi	<b>School Bond Payments</b> \$2,513,481 7.5 cpi		<b>Taconite Env. Protection Fund</b> \$3,349,534 10.0 cpi		
<b>Transferred from schools for effectiveness pay 2018 levy reduction</b> \$255,023 0.7 cpi	<b>Taconite Levy Sheriff's Fund</b> \$369,785 1.1 cpi		<b>Douglas J. Johnson Economic Protection Trust Fund</b> \$6,189,981 18.5 cpi		
					<b>Guarantee Fund</b> M.S. 298.225 M.S. 298.293

- \* Includes \$7,375,366 from the State General Fund (22.0 cpi).
- \*\* Payments to the funds are guaranteed at a percentage level of the base year (1983 or 1999) by M.S. 298.225 for local aids and M.S. 298.293 for Property Tax Relief.
- \*\*\* cents per taxable ton (cpi) totals may not add up due to rounding.

\*\*\*(\$255,023) was subtracted from the Taconite School Regular School and the RR funds for the Mountain Iron-Hull district and used to reduce the pay 2018 levy of cities/townships within the district (11.7 cpi).

**Does Michigan have as many  
mining jobs as other states?**

## Michigan

Mining Jobs - 36,491

Mining Contribution to GDP (*millions of dollars*) - 5,405

Coal Production (*millions of tons*) - 0

Electricity Generation from Coal (*% share*) - 38.1

### Employment:

- Coal Mining Jobs - 1,029
- Metal Mining Jobs - 16,723
- Non-Metal Mining Jobs - 18,739

### Labor Income (*millions of dollars*):

- Coal Mining
  - Direct - 1
  - Total - 66
- Metal Mining
  - Direct - 419
  - Total - 976
- Non-Metal Mining
  - Direct - 381
  - Total - 1,030

## Minnesota

Mining Jobs - 53,271

Mining Contribution to GDP (*millions of dollars*) - 7,524

Coal Production (*millions of tons*) - 0

Electricity Generation from Coal (*% share*) - 39.3

### Employment:

- Coal Mining Jobs - 945
- Metal Mining Jobs - 38,415
- Non-Metal Mining Jobs - 13,912

### Labor Income (*millions of dollars*):

- Coal Mining
  - Direct - 8
  - Total - 63
- Metal Mining
  - Direct - 1,041
  - Total - 2,405
- Non-Metal Mining
  - Direct - 342
  - Total - 855

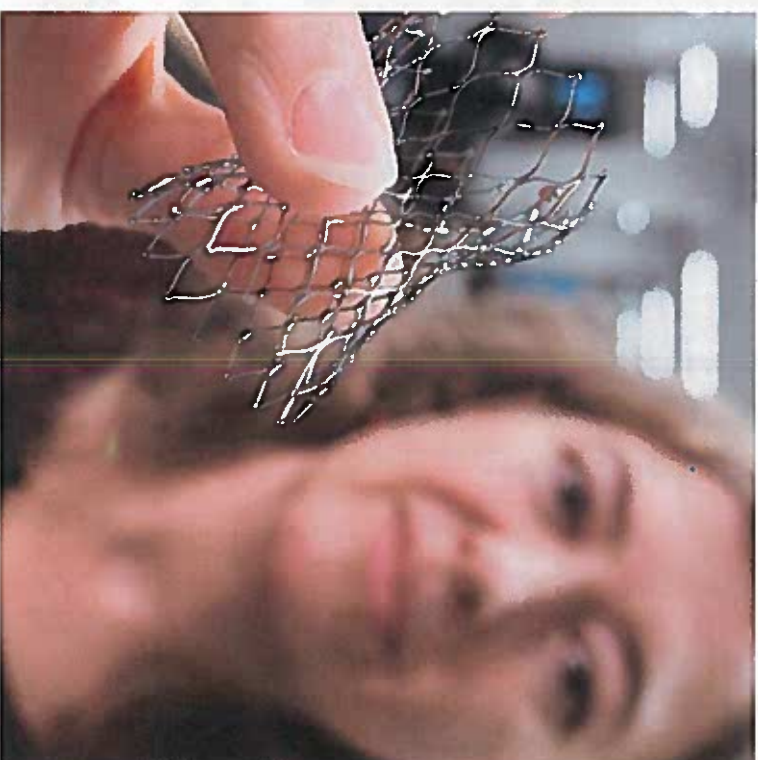
**Metallic mining and our  
modern lives...**



## **Metal is used in medical devices:**

Nitinol: malleable  
yet strong

Nickel/Titanium  
allows stents to be  
inserted without  
open heart  
surgery



**Cynthia Clague holds part  
of a heart valve made  
from nitinol**

# Instead of opioids for chronic pain

Medtronic spinal cord stimulation effective non-opioid treatment for chronic intractable pain

Medtronic

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## A NON-OPIOID OPTION FOR CHRONIC PAIN

*Medtronic spinal cord stimulation can be an effective non-opioid treatment for chronic intractable pain.*





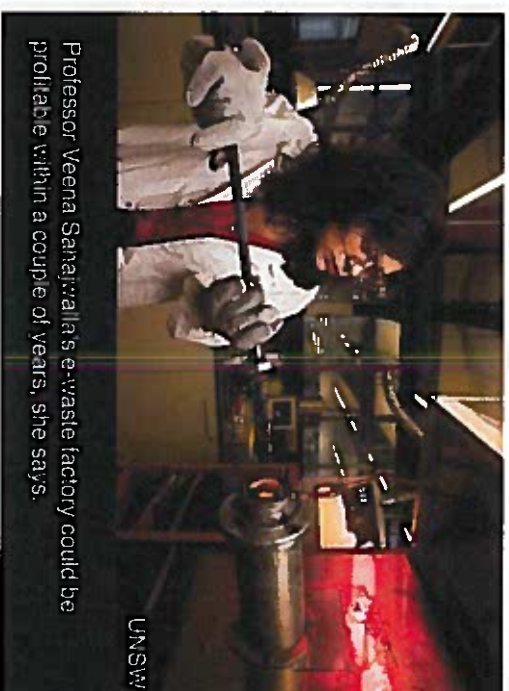
**This bill can start conversations around..**

# Urban Mining

**E-waste mining could be big business - and good for the planet**

By **Emma Woollacott**  
Technology of Business reporter

🕒 05 July 2018 | **Business**



Professor Veena Satayajalla's e-waste factory could be profitable within a couple of years, she says.

**Many millions of tonnes of televisions, phones and other electronic equipment are discarded each year, despite them being a rich source of metals. But now e-waste mining has the potential to become big business.**

