The Importance of Minerals and Mining

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Let’s start on a Monday morning.
Six o’clock Monday morning.
Time to get up.
Electricity to run the clock comes through Copper Wires.
Copper comes from a Copper Mine. Copper Sulfide minerals have to be concentrated to separate them from worthless Minerals.
The ore is hauled in large **Haul Trucks**. Some are 24ft high and 30ft wide with tires 14 ft tall!!!
The copper ore is crushed and then ground to a fine powder in Ball Mills.
The fine ore goes to banks of Flotation Cells in the Copper Concentrator,
and the Copper Sulfide Minerals are collected on bubbles.
The Concentrate is dried and the Sulfur is burned off in a furnace.
Molten copper is cast into Anodes which are refined to make Copper Rods.
The Copper Rods are heated and extruded to make Copper Coils,
and wire is made from the Copper Coils.
It takes a lot of work to get from the Minerals in the rocks in the Copper Mine to the Copper wire bringing electricity to the clock.
The electricity comes through power lines,
from a Coal fired **Power Plant** made out of Concrete and Steel. Over 50% of all electricity used in USA comes from Coal Fired Power Plants.
The **Coal** might come from a distant **Open Pit** Coal Mine,
delivered by long Unit Trains.
The Coal is burnt in boilers to generate steam which drives the generators to make electricity.
Power distribution requires a lot of Structural Steel,
which comes in many different shapes and sizes.
To make Steel we need **Iron Ore**.
Here it comes from a Minnesota **Taconite Mine**.
The ore goes to a Taconite **Pellet Plant**, 

and is made into **Taconite Pellets**,
which are delivered by train to Lake Superior docks,
and transported by ship to Lower Lakes Steel Mills,
where they are fed into a **Blast Furnace With Coke** (made from coal) and **Limestone** to make liquid iron.
Molten iron is tapped from the Blast Furnace,
and poured into a Basic Oxygen Furnace to make Steel.
Large steel sections are made from ingots in large Integrated Steel Mills,
while small shapes like rebar are often made from **Scrap Iron** in **Mini Mills**.
What about Concrete?
All roads and buildings need Concrete.
Concrete is made with Sand from Sand Pits,
and Crushed Rock Aggregates,
from a Rock Quarry,
and Cement.
Cement is made at a **Cement Plant** in a high temperature **Cement Kiln**,.
from Limestone and other minerals,
with the Limestone mined in a Limestone Quarry.
It’s 6:05.
Time to get up and go to the bathroom.
We use the toilet, clean our teeth and take a shower.
Where does the water come from?
It comes into the house through Copper Pipes,
after purification in the local **Water Treatment Plant**, 
which receives large volumes of water through Steel Pipes,
or large **Concrete Conduits**, 
from a River or a Reservoir behind a Concrete Dam.
Where does the toilet come from?
The toilet is a **Ceramic** product,
and all Ceramic products are made from Clay,
mined from a Clay Pit.
When we flush, the waste water leaves the house in **Cast Iron** Pipes,
and goes through large Concrete Sewer Pipes,
to a **Waste Water Treatment Plant**, 
and now it’s 6:15.
Time for breakfast.
Our food is stored in Refrigerators made with Steel, Copper, Aluminum, Plastics and Paints.
But before breakfast be sure to get your Vitamins and Minerals.

They’re essential for good health.
Let’s have a donut.
Finally something that’s not mineral.
But the donut comes from the bakery,
and the bakery needs Flour,
which comes from a **Flour Mill** constructed with concrete and steel.
The grain is transported by train on steel rails,
and is harvested by large Combine Harvesters.
All plants need mineral Fertilizers. Nitrogen (N) is provided by Liquid Ammonia, Urea or Ammonium Salts.
Phosphorus (P) comes from a Phosphate Mine,
and Potassium (K) from a Potash Mine,
where the Underground Mine tunnels can extend for many miles.
Agricultural machinery is needed to till the ground.
Without modern machinery we go back to Horse Power,
and without Minerals: no donuts, no television, no cities, no modern civilization.
That’s the first half hour of the week and look at all the Mines and Minerals we’ve had to rely on.
So: Are Minerals Important?
You Betcha

Absolutely everything we depend on is either made from minerals or relies on minerals for its production.
RED WORD LIST

COPPER   COPPER MINE   COPPER SULFIDE   MINERALS   HAUL TRUCKS
BALL MILLS   FLOTATION CELLS   CONCENTRATOR   CONCENTRATE
SULFUR   ANODES   POWER PLANT   COAL   OPEN PIT   UNIT TRAINS
STRUCTURAL STEEL   IRON ORE   TACONITE   PELLET PLANT
TACONITE PELLETS   STEEL MILLS   BLAST FURNACE   COKE   LIMESTONE
BASIC OXYGEN FURNACE   INTEGRATED STEEL MILLS   SCRAP IRON
MINI MILLS   CONCRETE   SAND   SAND PITS   AGGREGATES
ROCK QUARRY   CEMENT   CEMENT PLANT   CEMENT KILN
LIMESTONE QUARRY   COPPER PIPES   WATER TREATMENT PLANT
STEEL PIPES   CONCRETE CONDUITS   RESERVOIR   DAM   CERAMIC   CLAY
CLAY PIT   CAST IRON   SEWER PIPES   WASTE WATER TREATMENT PLANT
VITAMINS AND MINERALS   FLOUR   FLOUR MILLS   COMBINE HARVESTERS
FERTILIZERS   NITROGEN   LIQUID AMMONIA   UREA   AMMONIUM SALTS
PHOSPHORUS   PHOSPHATE MINE   POTASSIUM   POTASH
UNDERGROUND MINE   HORSE POWER

For more information about minerals and their uses, visit:
The Mineral Information Institute at www.mii.org