

Day 1

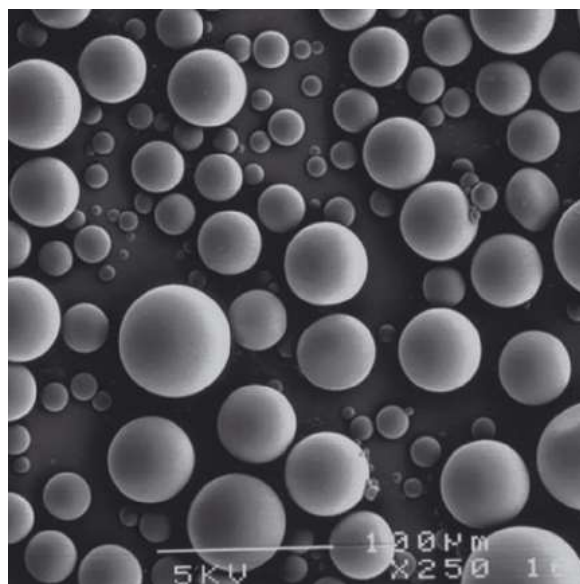
Separation Lab

Separation Lab Agenda

	<input checked="" type="checkbox"/> In class	At home
Day 1	Matter & Changes	<input type="checkbox"/> prelab
Day 2	Separation Lab (planning)	<input checked="" type="checkbox"/> DUE: prelab
Day 3	Separation Lab (starting)	<input checked="" type="checkbox"/> DUE: experiment plan
Day 4	Separation Lab (finishing)	<input type="checkbox"/> plan poster
Day 5	Poster Work Day	<input checked="" type="checkbox"/> DUE EOC: poster
Day 6 (opt)	Poster Work Day	

Matter & Particles

- ♦ Chemistry is the study of matter
- ♦ matter = particles
- ♦ observation
 - 5 senses
 - measurement
- ♦ inference
 - explanation of observations
 - interpretation of data
- ♦ explanations can only use vocabulary from class



Physical change = no change at the particle level

- liquid H₂O and gaseous H₂O are both H₂O

Chemical change = change at the particle level

- electrolysis of water causes H₂O to split into H₂ & O₂ particles

Physical and chemical change are NOT related to whether the change is reversible.

Many chemical changes can be reversed ($\text{H}_2 + \text{I}_2 \rightleftharpoons \text{HI}$).

Many physical changes cannot be reversed (breaking an egg).

EXPANSION: add slides about types of substances & mixtures

Thinking about Matter

Properties

- ♦ physical
- ♦ chemical

Changes

- ♦ physical
- ♦ chemical

Think about particles

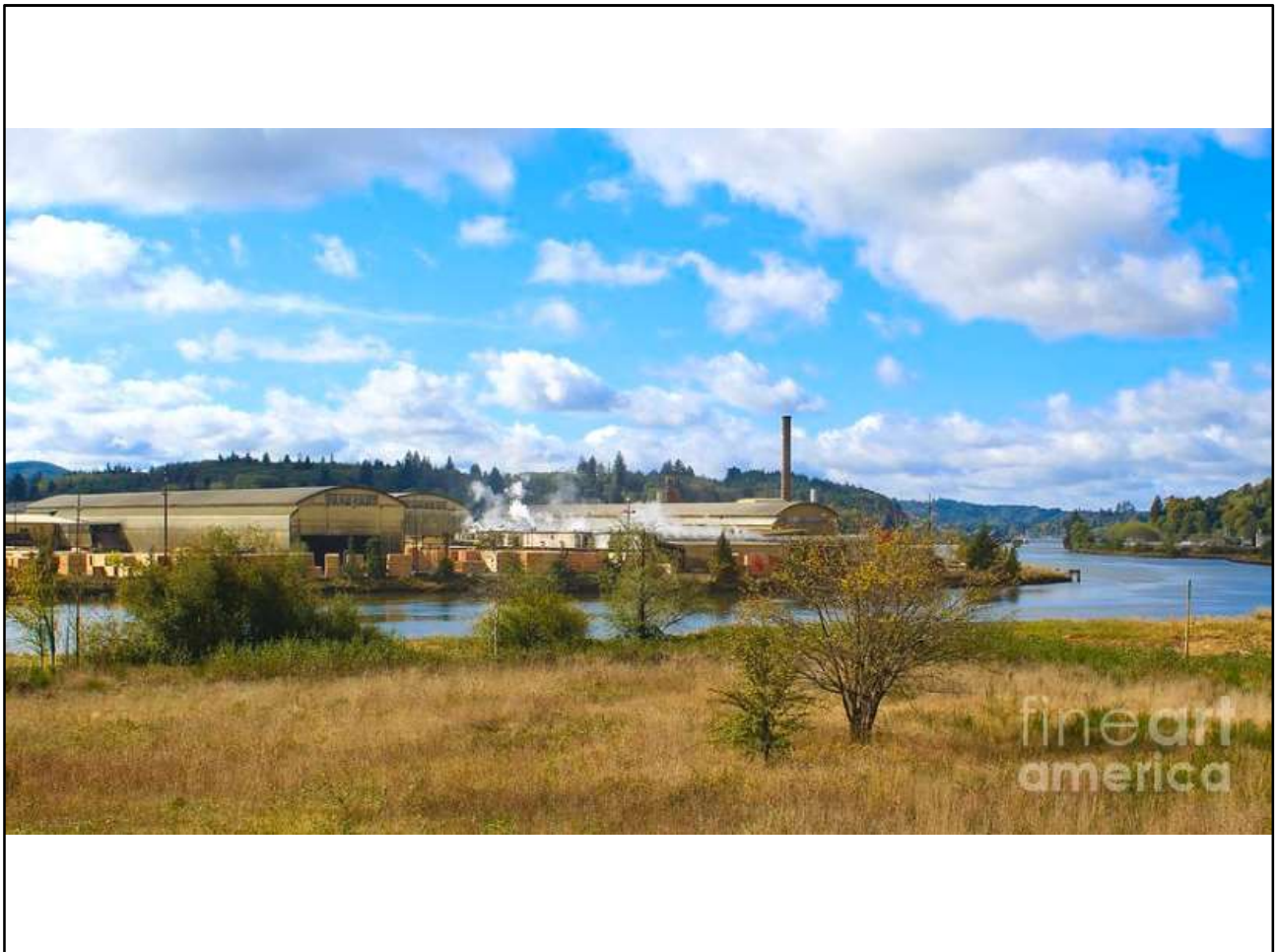
- ♦ Are particles changed in the process?



Bark and Rock Separation

Log yard material management

Weyerhaeuser sawmill in Raymond WA



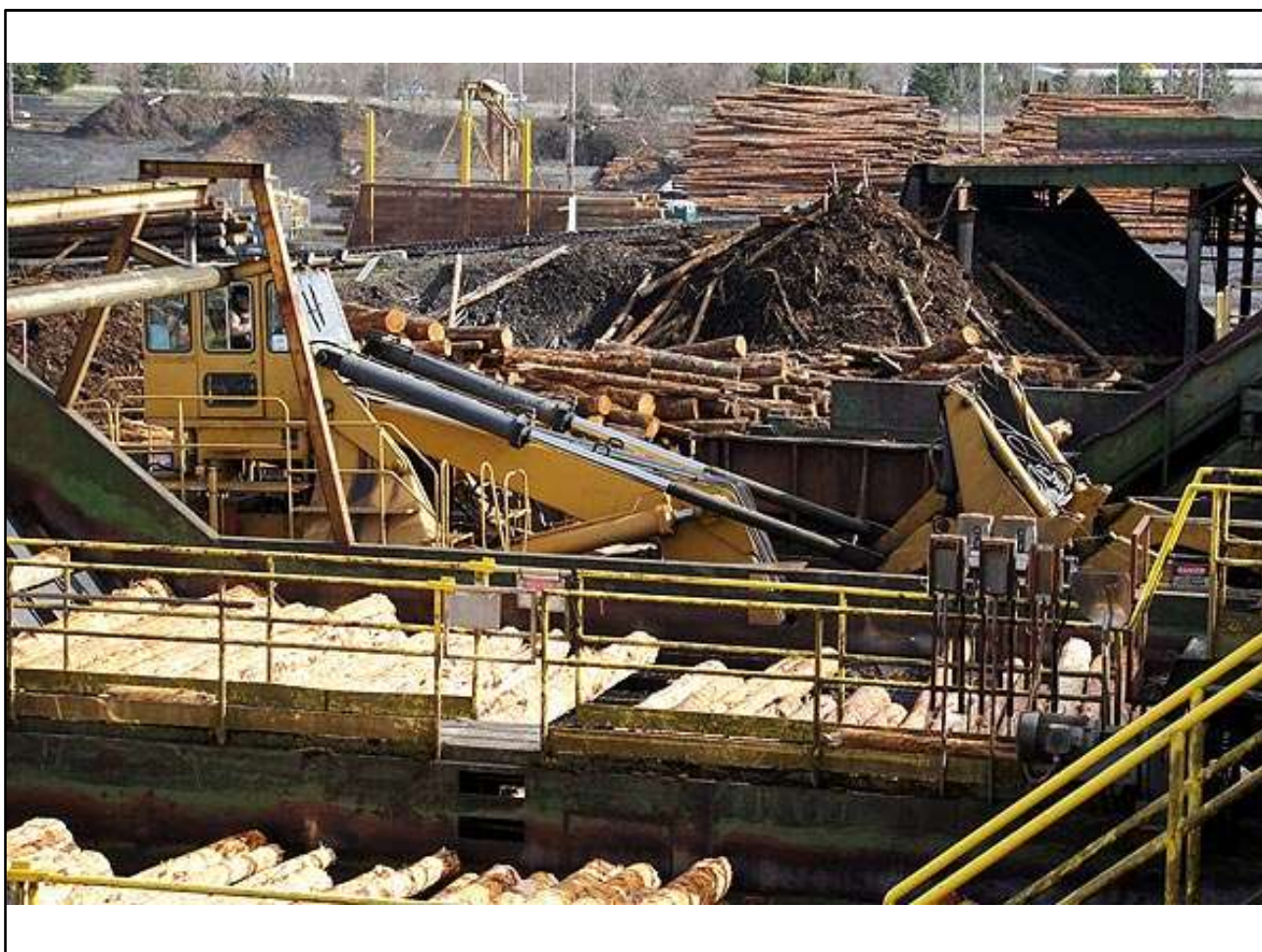
Saw mill operations



Generic sawmill logyard



Logyard operations. Note pile of debris in upper right quarter.



Close up of debris/slag from log yard.

Bark, rock and dirt to be separated



Separation Lab

In journal:

- ♦ New page
- ♦ Lab title at top
- ♦ Partner name: *(leave blank)*



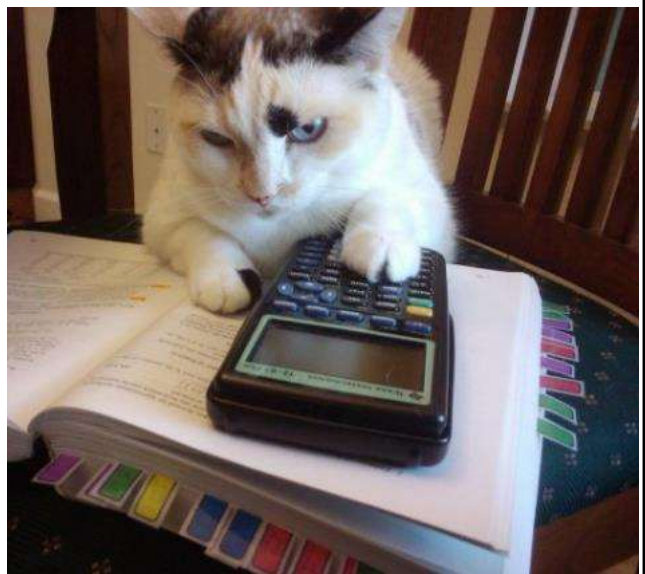
Separation Lab Prelab

- ◆ You will be given a heterogenous mixture
 - salt
 - sand
 - poppy seeds (i.e. sawdust)
 - iron filings
- ◆ Describe at least one physical or chemical property of each substance
- ◆ Describe how you can use that property to separate the substance from the rest of the mixture
- ◆ At least one page blank for data & notes



Work Time

Work on prelab



Day 2

Separation Lab

Separation Lab Agenda

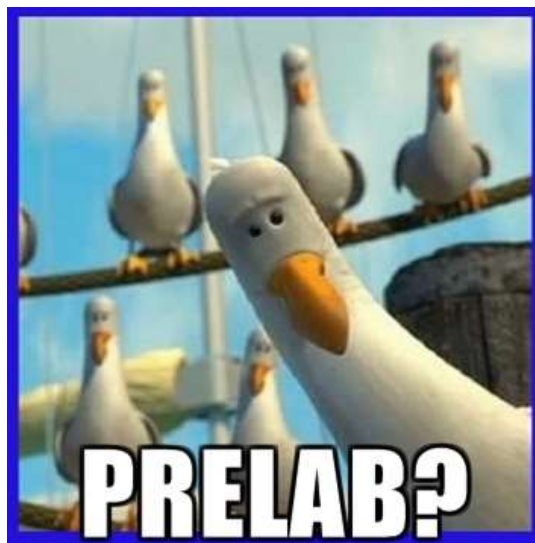
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Can be done as individual review by teacher, partner discussion, table discussion.

Separation Lab Prelab

Open your journal to
your prelab.

Get your prelab
stamped!



Separation Lab

With partner:

- ♦ Get lab sheet
- ♦ Take journal and lab sheet
- ♦ Sit together at station in chem lab



Separation Lab

With partner:

- ♦ Get planning sheet
- ♦ Create experiment plan
- ♦ Get stamp!



Day 3

Separation Lab

Separation Lab Agenda

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Separation Lab

With partner:

- ♦ Substance sample is at bench
- ♦ Label substance container
- ♦ Get only equipment needed for step 1
- ♦ Mass initial mixture
- ♦ Separate substances
- ♦ Take notes on procedure



Separation Lab

Clean-up

- ♦ Return all equipment, except:
 - petri dish
 - filter paper
 - small beaker or flask
- ♦ On big tray:
 - Label scratch paper
 - Put experiment on scratch paper



Day 4

Separation Lab

Separation Lab Agenda

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Separation Lab

Today:

- ♦ **Hotplates**
 - Only for evaporating water
 - One partner must watch at all times
- ♦ **Finish separating**
- ♦ **Mass final samples**
 - Save packets for Monday
- ♦ **Clean up**



Separation Lab Poster

Lab Reflection

- ♦ One team = one poster
- ♦ Procedure
 - Paragraph, not steps
 - Evaluation
 - Improvement
- ♦ Data
 - Mass data
 - Financial calculations
 - Four packets
- ♦ Design
 - Creative title
 - Colorful
 - Drawings



Day 5

Separation Lab

Separation Lab Agenda

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Sawmill Separation

- ◆ Separation is a two-phase process.
- ◆ First the material is screened.
- ◆ Then the material is separated in a wash.



**Materials after
process is bark,
rock, and fines.**



Separation Lab

Poster

◆ Procedure

- for each substance
- paragraph, not steps
- what worked well
- what can be improved

◆ Data

- masses
- profit
- packets

◆ Design

- creative title
- colorful
- drawings

