

Environmental Issues

Possibilities for Contamination

Liquid Form

- Leakage into soil, waterways
- Flooding of nearby cities and towns
- Hazardous to store because of limited space and uncertainty of containment techniques

Solid Form (powder)

- Powdered form can be dispersed through the wind
- Can dust the environment, thwarting or coopting plant life
- Inhalation by humans or animals can cause internal chemical burns

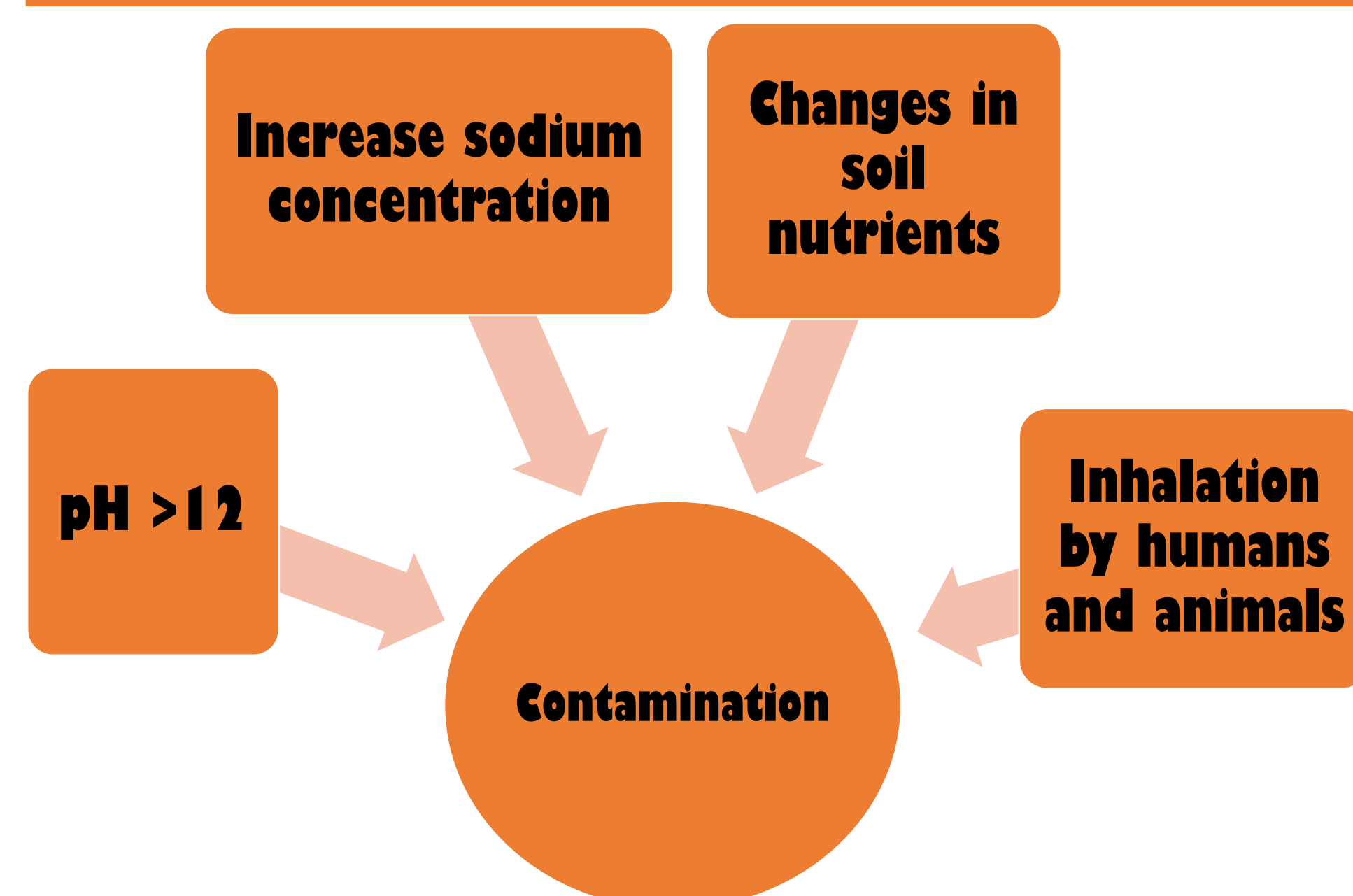
A Tragic Example: Ajka, Hungary



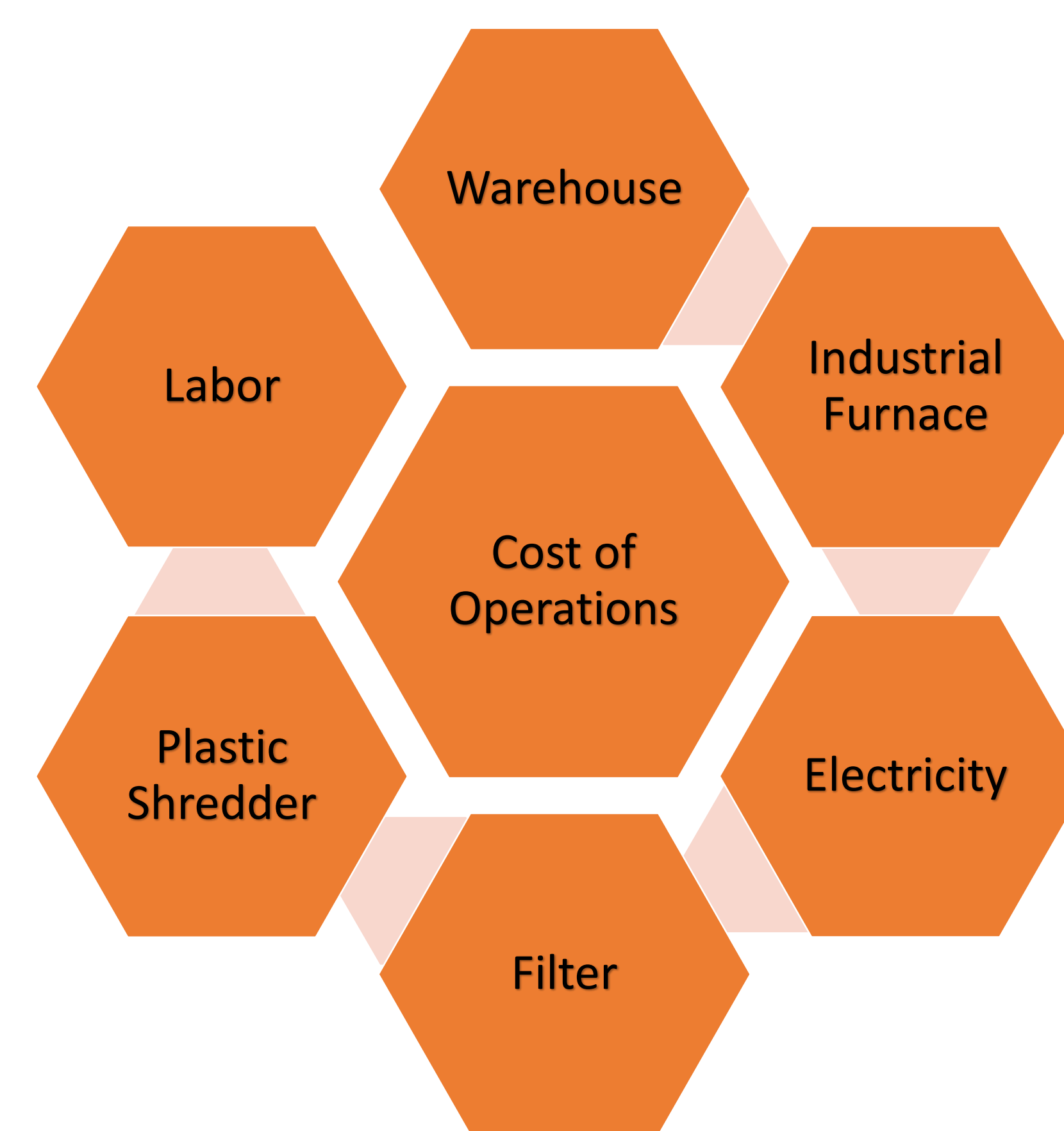
A Red Mud reservoir wall broke and released 1 million cubic meters of Red Mud



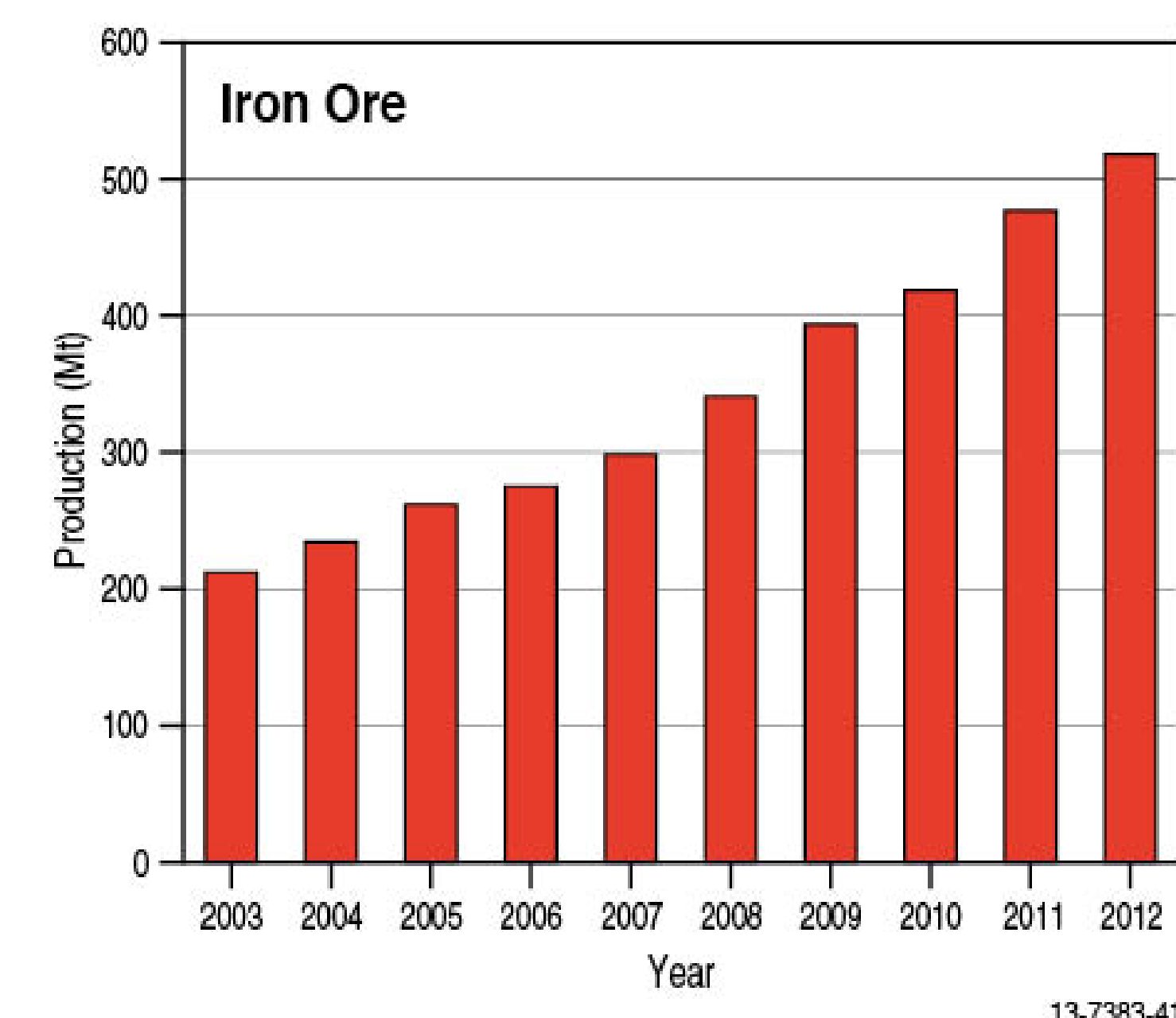
Red Mud swept through the streets of Ajka, killing 10 and injuring 150



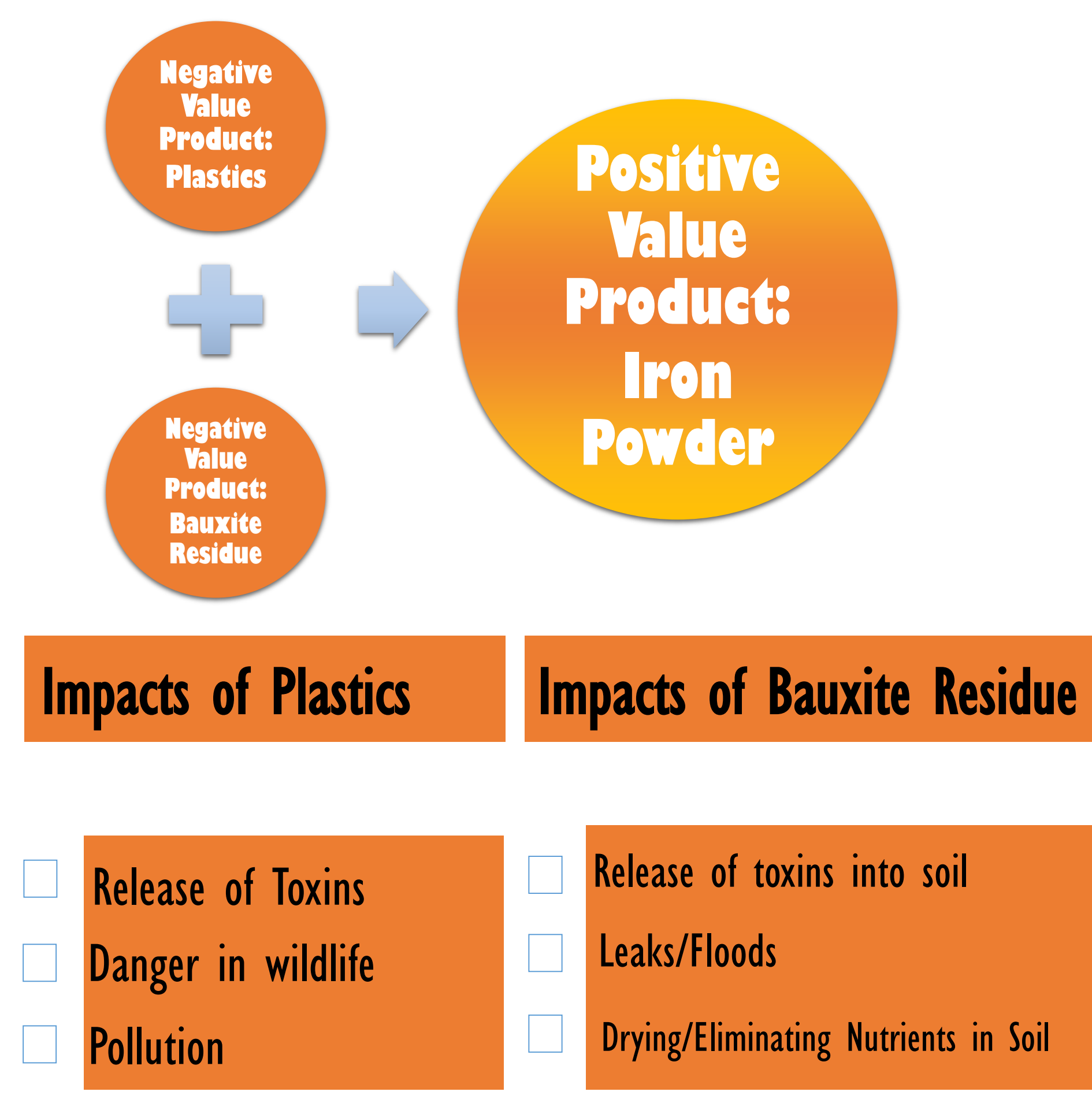
Economic Aspects: How Can Producing Iron From Red Mud Be Economically Viable?



As the demand for iron increases, so does the amount needed to be produced to meet these demands. This means digging up more Earth and wasting more resources to retrieve the small percentage of iron found in the mining areas. Retrieving iron from red mud will not only help save the environments that are currently being destroyed for their resources, but will also save the companies producing iron a lot of money.



Social Impacts of Red Mud and Plastics



Plastic waste and Red mud are two products that are of no use. Almost all of their impacts are negative. The main impacts affect our wildlife and earth as a whole.

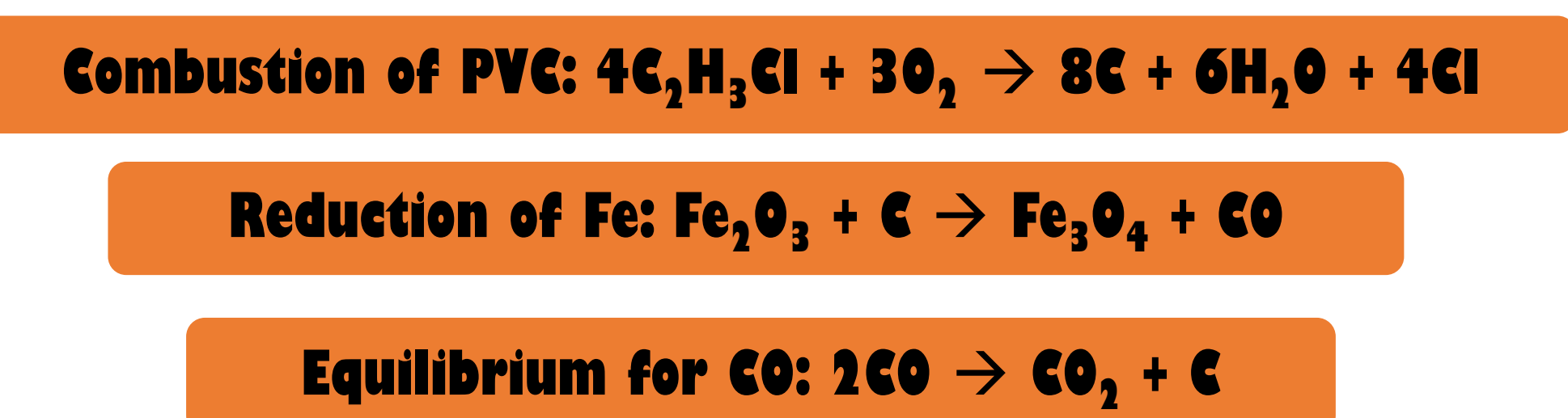
Impact On People		
Toxins from contact with Red Mud/Plastics	Cost of storage for Businesses	
Plastics: Throwaway Product	Red Mud-Ruins Crops	Toxins cause illnesses



Experiment

The purpose of this experiment is to be a proof of the concept that two negative value products can be taken and made into something that can be sold. Fe₂O₃ is put in a furnace with PVC (C₂H₃Cl) to produce magnetite, which can be sold to iron manufacturers.

Reactions



Separation

The magnetite is separated from the rest of the products of the reaction by magnetic separation. The total mass of magnetite is then found by ICP.



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Professor Diran Apelian, Director of WPI Metal Processing Institute
Sumedh Gotsu, Graduate Student

Citations:

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