

ParaTech GLOBAL

*From Red to Green: The commercially viable
Red Mud remediation process...*

The Problem

The Solution



WELCOME



FROM A RED PROBLEM TO A GREEN SOLUTION

ParaTech Global is an environmental remediation company based on a proved patent to process "Red Mud" (RM) or spent bauxite, which is disposed of openly next to alumina refineries at every plant in the world. Red Mud contains sodium hydroxide which is a dangerous caustic. With a pH of 13, any extended exposure to this material can be life threatening. ParaTech is able to stabilize Red Mud for recycling as an ingredient in ceramic/cement building materials, extract the caustic and recover mineral elements. The ParaTech process makes alumina refining fully sustainable. With patents in 18 countries, our process is the only commercially viable Red Mud (RM) remediation process in the world.

ABOUT



THE ALUMINA INDUSTRY – THE PROBLEM & UNMET NEED

PROBLEM:

Alumina Industry Waste

The Bayer process for refining aluminum hydroxide (alumina hydrate)

PROBLEM:

Red Mud Disposal

Two tons of red mud are disposed for every ton of alumina resulting in a total

PROBLEM:

Dangerous Disposal Sites

These above ground disposal ponds will eventually become unstable, resulting in

from bauxite results in a dangerous waste by-product, "red mud" or left over bauxite that contains unrecovered caustic used in the refining and it also contains unrecovered aluminum hydroxide.

2.5 billion tons already disposed, with a pH above 11.5, in 30 countries. More than 80 million additional tons are produced and disposed of each year.

serious environmental and human damage.

THE UNMET NEED:

Develop a financially feasible and commercially viable technology to recycle the red mud and recover valuable chemicals. Our process makes alumina refining fully sustainable. With patents in over 18 countries and patents pending in others, our process is the only commercially viable Red Mud (RM) remediation process in the world.

STORY



AN OLD PROBLEM, THE SOLUTION

In 1887 Carl Josef Bayer invented the "Bayer Process," which is used in most alumina refineries to separate alumina from bauxite. The process typically uses caustic sodium hydroxide of pH above 13, heated with bauxite to separate alumina. Alumina is the raw material for aluminum production by electrolysis. Alumina refining takes place in 30 countries.

Alumina Industry

Alumina, or "aluminum oxide" is a white granular material, a little finer than table salt. The Bayer refining process, used by almost all

Alumina, or aluminum oxide, is a white granular material, a little finer than table salt. The Bayer refining process, used by almost all alumina refineries worldwide, involves four steps: Digestion, Clarification, Precipitation, and Calcination. To refine alumina from bauxite, the ore is ground and mixed with lime and caustic soda, pumped into high-pressure containers, then heated up to 140 C or 240 C or 280 C depending on the mineralogical composition of the raw material. The aluminum oxide is dissolved by the caustic soda, then precipitated out of this solution, washed, and heated to drive off water. What is left is the white powder called alumina, which is then transformed into aluminum metal via electrolysis, i.e. the smelting process. Red Mud (RM) or Red Sludge is a toxic by-product of this refining process.

The Problem - Red Mud Disposal

A typical alumina refinery produces one to two times as much red mud as it does alumina. Presently, there is approximately 2.5 billion tons of Red Mud disposed of in manmade unreinforced ponds or lakes with a pH exceeding 11.5 from all of the 30 alumina producing countries combined. More than 80 million additional tons are produced annually. As the strength of environmental regulations increase, the Red Mud disposal status quo, of having millions of tons in manmade lakes, is becoming untenable. Red Mud is composed of a mixture of solid and metallic oxide bearing impurities, with 5-20% caustic residual (sodium hydroxide) which presents the aluminum industry with its single most critical disposal problem. In addition to the up to pH 13 caustic residual, left from the refining process, there is iron and other materials in red mud including: silica, unbleached residual aluminum, and titanium oxide. Red Mud cannot be disposed of easily and represents an enormous environmental and land use problem for the industry and communities, as it takes up land area that can neither be covered over and built upon, nor farmed, even when dry. Red Mud is highly caustic with a pH ranging from 11.5 to 13. Environmentally acceptable levels for pH are between 7 and 9. Stored in mountainous heaps and lakes of red toxic material is an unlikely resource, untapped until now. The blight that is Red Mud (RM) is now a green resource. The ParaTech process addresses all of the Red Mud disposal issues associated with human injury and environmental damage.





FACTS



SOLUTION

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SOLUTION

The proven ParaTech patented process addresses all the red mud disposal issues associated with human injury and environmental damage. Using the ParaTech chemical and other treatment processes, two objectives are achieved:

1. Recovery and separation of the

BENEFITS

2

BENEFITS

Our technology reduces direct and contingent refinery plant costs and enhances plant revenues mitigating the cost to implement our process in an alumina refinery. These include:

1. Elimination of Red Mud management costs in perpetuity.

COMPELLING

3

COMPELLING

Utilization of the ParaTech Process is compelling due to a growing regulatory environment in which alumina refineries must manage red mud in perpetuity:

1. Growing pollution of the surface & ground water as well as ambient air.

sodium hydroxide (caustic) and aluminum oxide (alumina) along with boiler feed water from the Red Mud for return to the alumina refinery. Our process recovers effectively 100% of the soluble caustic soda and alumina that is in the red mud slurry after leaving the alumina refinery.

2. Reduction of the Red Mud pH to the neutral range of pH7-pH9, eliminating opportunities for human suffering and environmental damage. In 2011, a 1/10th scale ParaTech Global pilot plant successfully demonstrated our process. Click [here](#) to see a video of the Pilot Plant Demo in operation in Hungary in 2011.

2. Recycling and sale of recovered Sodium Hydroxide and Aluminum Hydroxide.

3. Sale of recycled Stabilized Red Mud (SBR) for use as an outperforming ingredient in ceramic and cement building products. Recycling test results are available.

4. Recycled use of recovered boiler feed water, useful for power generation.

5. Elimination of long term contingent Red Mud liability on the Balance Sheet, thereby increasing equity as the SBR is sold.

6. Achievement of "Fully Sustainable" status - meaning no remaining wastes for the first time in this industrial processing industry.

2. Growing cost to maintain the disposal ponds / lakes, (red mud stacks).

3. Increasing regulatory requirements.

4. Increasing contingent environmental liability to the alumina refineries. This contingent liability must remain on the balance sheet as reserves for a potential disaster.

5. Growing insurance costs.

6. Growing loss of income from land that is displaced by red mud stacks.

7. Continuing loss of reuse value of sodium hydroxide and lost aluminum hydroxide revenue.

Watch The Video of ParaTech Global Pilot Plant



The ParaTech patented process was recently presented and evaluated at the Ajka, Hungary alumina refinery using the ParaTech pilot

plant. A well-known chemical testing company, Analitika, evaluated the processed red mud and brine, leading to their conclusion that the red mud stabilized to a neutral pH and the brine exhibited the predicted chemical composition.

“Stored in mountainous heaps and lakes of red toxic material is an unlikely resource untapped until now. The blight that is Red Mud (RM) is now a green resource.”

- The Inventor

CONTACT US

Name *

Phone *

Email *

Business *

Your Message *



ParaTech Global, LLC

One Hibiscus Alley

5093 Dronningens Gade, Ste. 1

St. Thomas, VI 00802

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SUBMIT

START

WELCOME

ABOUT

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CONTACT

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FOR INVESTORS 🍷

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