

# Pollution from a primary aluminum smelter for environmental law class



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Pollution from Primary Aluminum Smelter (College) Pollution from Primary Aluminum Smelter Introduction The process of extraction of aluminum from its oxide alumina is called aluminum smelting which is generally done through Hall-Heroult method. Usually, alumina is extracted from the ore Bauxite during the Bayer process at an alumina factory. Aluminium smelting is an electrolytic process; and hence it consumes huge amounts of electricity. Although aluminum plays a vital role in the overall industrial growth, its extraction process through aluminum smelting raises series of environmental issues. This paper will evaluate the range of water pollution caused by aluminum smelting and its aftereffects on public health and the environment as a whole. It has been identified that mainly three types of water discharges are associated with aluminium smelting. Process water is the liquid effluent which is mainly used for cooling and metal casting; it contains small quantities of organic matter, fluorides, oils, suspended solids, and industrial gases. This process also discharges waste water from restrooms and laboratory facilities, and the discharged water contains organic matter and suspended solids. During the aluminium smelting process, drainage water is also discharged. It is estimated that the "Portland aluminium smelter discharges 73 ML of process water each year" (Salzman, Allinson, Stagnitti, Coates & Hill, 2001). In modern days, an effective system called water treatment center is established in most of the aluminum smelting plants where the water effluents are accumulated and eliminated. However, the water treatment center would not be able to eliminate these water pollutants completely. Adams (2011) points out that excess level of fluorine content in water may lead to dental fluorosis. Similarly, aluminum is very toxic to fish and aquatic insects if its concentration exceeds the limit 1

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mg/L. The excessive intake of aluminum causes nausea, vomiting, and oral ulceration in humans. PAHs in aluminium smelters constitute a potential source for water pollution and thereby a threat to public health. In addition, the fluorides, aluminum, and Polycyclic Aromatic Hydrocarbons also have a negative impact on aquatic life. Since water pollution, as a result of aluminium smelting seriously impinges on the aquatic life, it is also a considerable threat to ecosystem. The aluminum extraction process also produces several types of atmospheric pollutants such as silica, carbon dioxide, fluorinated compounds, particulates, and PAHs. All of these substances produce horrible environmental issues. For instance, the increased emission of CO<sub>2</sub> is a very serious threat to the environment with regard to global warming. In addition, some solid waste residues such as red mud, spent potlining, and dross are also generated through aluminum smelting. The above discussed impacts can be mitigated to some extent if some effective measures are taken during the aluminium smelting process. It advisable to develop refinery systems in the plant so that various types of liquid effluents generated from this process can be recycled. It is also recommendable to invent more effective aluminum smelting methods that would generate lower level of water pollutants. Evidently, aluminum extraction plants should not be operated in urban areas or near to common water resources. For this purpose, it is essential to generate electricity within the plant. Moreover, governments should formulate effective industrial policies that would limit the generation of water pollutants. References

Salzman, S. A Allinson, G. Stagnitti, F. Coates, M. and Hill, R. J. (2001). “

Performance of constructed evaporation ponds for disposal of smelter waste

water: A case study at Portland Aluminium”. Victoria, Australia., Water  
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Research. 35, I(9), 2121-2198. Adams, M. (2011). " CDC adjusts fluoride poisoning of America's water supply to a lower level". Natural News. com. Retrieved from [http://www.naturalnews.com/030952\\_CDC\\_fluoride.html](http://www.naturalnews.com/030952_CDC_fluoride.html)