

Reuse and Recycle of Wet Flue Gas Desulfurization (WFGD) Waste in Coal based Power Plants: Desulfurization, in Environmental Friendly Way

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Abstract—The Coal based power plants, emits particles/gases, sulfur dioxide and nitric oxides in high quantity resulting in serious health ailments and environmental hazards. Moving from boiler to de-dusting system (Electrostatic bag or bag house filter), stuff from flue-gas observe removal of coarse particles and reduction of the mass concentration. However, within the process i.e. Wet Flue Gas Desulfurization (WFGD) via wet or spray drying scrubbing, calcium carbonate, calcium sulfate, caustic lime etc. and fine particles are liberated. By-products like limestone (47.5%) and minerals like gypsum (7.9%) are also released. This review concentrates in, summarizing the studies relating to desired treatment of the waste by-product from WFGD, for achieving surroundings friendly modes to scale back health hazards and improve the quality standards within environment. Recent literature from authentic sources like, Google Scholar and PubMed was preferred using Boolean strategy. Recent studies emphasizing Flue Gas Desulfurization (FGD) gypsums use for removing fluoride from industrial effluents and portable water via adsorption to alleviate human health hazards. In agriculture FGD gypsum is shown to contribute improvement in soil health, mending heavy metal uptake, crop growth etc. Also when mixed with slag, it increase early age strength and reduce drying shrinkage in concrete production. The red mud (bauxite residue from alumina industry), because of its alkaline pH, can be used as adsorbent for desulfurization. Not only this, red mud with category C fly-ash result in formation of high strength geopolymer. FGD fly ash can restore the alkalinity/pH of sea water and once mixed with some binder facilitate forming non-structural cement mortar, bricks, fire-retardant walls for interior partitions. So, reuse and recycling of the WFGD by-product can help control pollution caused by coal based power plants in an effective way.

Keywords: Coal; Power plant; Flue gas; Gypsum; Pollution; flyash;