

Air Pollution From Steel Industry's

M.G.Mostafa

Institute of Environmental Science, University of Rajshahi, Bangladesh

Opinion

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***For Correspondence**

M.G.Mostafa, Institute of Environmental Science, University of Rajshahi, Bangladesh.

E-mail: mostafais@yahoo.com.

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Air-polluting emissions from steelmaking furnaces include metal oxides, smoke, fumes, and dusts to make up the visible aerosol plume. They may also include gases, both organic and inorganic. If steel scrap is melted, the charge may contain appreciable amounts of oil, grease, and other combustibles that further add to the organic gas and smoke loadings. If the ore used has appreciable fluoride concentrations, the emission of both gaseous and particulate fluorides can be a serious problem. Emissions from foundry cupolas are relatively small but still significant, in some areas. An uncontrolled 2-m cupola can be expected to emit up to 50kg of dust, fumes, smoke, and oil vapor per hour. Carbon monoxide, oxides of nitrogen, and organic gases may also be expected. Control is possible, but the cost of the control may be prohibitive for the small foundry which only has one or two heats per week. Steel-making is commonly associated with coke ovens. Coke is coal that has undergone pyrolysis i.e. heated up to 1000–1400 °C.

Sources of air pollution in the iron and steel industry

Whenever reference is made to air pollution caused by the iron and steel industry, this relates often only to the contamination of the outdoor atmosphere with which the general public is familiar in the form of dust and gas emitted by chimneys of converters, open-hearth furnaces, sintering plants, power stations, etc.

Despite all air pollution control measures applied to date, there are residential areas near industrial centres where the daily deposition of dust exceeds 1g per square metre of surface area and where under certain atmospheric conditions the content of SO₂ and other gaseous contaminants attains values which cannot be considered as constituting a source of danger to sensitive plants only.

ECSC activity in the field of air pollution control

Having regard to this situation, the ECSC has for ten years been making

considerable grants towards research aimed at increasing knowledge on the nature and extent of such air pollution and developing practical control methods. In the iron and steel industry sector, these grants amount to about 3m. units of account These grants come out of levy revenues and are made in accordance with section 55 of the ECSC Treaty. They cover both individual studies and entire research programmes.

Scrubbing of converter gas without subsequent combustion

As stated earlier, the dust-laden gas issuing from the converter is greatly increased in volume by the infiltrating air. The installations requirements for collecting, transporting, cooling and cleaning such waste gases are correspondingly dearer and take up more space.

Two studies were concerned with solving this difficult problem of combustion air and infiltrating air. Their basic principle, although not the method adopted, was the same, viz. to collect the CO-containing converter gases in a substantially unburnt state, clean them and then burn them in a torch flare. In view of the possible formation of explosive mixture with CO-containing gases, different types of scrubbing methods were employed in each study.

Air pollution is the permeation of particulates, biological molecules, or other harmful gases into Earth's atmosphere, causing disease, damage to other living organisms. Air pollution may come from reliable industries or natural sources. The atmosphere is a complex natural gaseous system that is essential to support life on planet Earth. Stratospheric ozone depletion due to air pollution has been recognized as a threat to human health as well as to the earth's ecosystems.