This is the document referred in a number of AP-42 sections by:

13799.000

REF: 1
8.10 Concrete Batching

Air Pollutant Emission Factors. Final Report. Resources Research, Inc. Reston, Va Prepared for National Air Pollution Control Administration, Durham, N.C., Contract Number CPA-22-69-119. April 1970.

This document is in two parts: The main volume (April 1970) and a Supplement dated August 1970.

AIR POLLUTANT

EMISSION FACTORS

Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

April 1970

Prepared for

Department of Health, Education and Welfare
Public Health Service
Environmental Health Service
National Air Pollution Control Administration
Washington, D. C.

TRW
SYSTEMS GROUP OF TRW INC.

1. INTRODUCTION

This report represents a compilation of the latest atmospheric emission data available for a wide variety of selected processes. One-half of the 40 processes discussed in this report involve an updating or review of existing emission factors presented in Public Health Service Publication 999-AP-42, "A Compilation of Air Pollutant Emission Factors" by R.L. Duprey. The remaining factors represent new processes for which emission factors were not previously reported. All emission factors refer to uncontrolled processes unless otherwise stated.

Information for emission factors was gathered primarily from the technical literature up to November 1969, state and local air pollution control agencies, trade and professional associations, releasable portions of data obtained by TRW in various past studies, and individual companies and persons within the various industries under study. In all cases, attempts were made to obtain some idea of the validity of the information obtained, and thus place each bit of data relative to other data in the same area. Greatest weight was given to actual measured emission data, i.e., source tests, especially when the measuring technique was known. Estimates of emissions were also made when feasible by making material balances and process loss or yield calculations.

In general, it was found that except for the combustion and incineration fields, very little new emission factor data has been made public since Duprey's work in 1967. In the metallurgical and mineral industries, additional emission data has been obtained by various companies and control equipment manufacturers. This information has not been made public, however. Some emission data was available for most of the new factors developed in this report. Frequently, however, these data were in the form of concentrations

total possible weight of 20, process data with a weight of 10, and engineering analysis with a weight of 10. The highest possible score for any factor was thus 40. Any factor ranking less than 20 was considered questionable and those ranked 20 or greater were considered reliable.

The emission data category rated the amount of measured emission data, i.e., stack test data available with which to develop an emission factor.

The process data category included such factors as the variability of the process and its effect on emissions, and available data on the variables. The engineering analysis category included the data available upon which a material balance or related emission calculation could be based.

The range of values for many emission factors is large. However, when the factors are applied to a large number of sources, the calculated overall emissions should approximate the true value. When applied to a single isolated source, an emission factor may yield emissions that differ considerably from the true value. Measured emission data should therefore be used, if possible, for single sources.

7. MINERAL PRODUCTS INDUSTRY

Mineral processing is characterized by particulate emissions in the form of dust. Frequently, as in the case of crushing and screening, this dust is identical to the material being handled. Emissions also occur through handling and storage of the finished product since this material is often a dry fine material. Particulate emissions from some of the processes such as quarrying, yard storage, and road dust are difficult to control. However, most of the emissions from the manufacturing processes discussed in this Section, with the exception of fiber glass, can be reduced by conventional particulate control equipment such as cyclones, scrubbers, and fabric filters. Because of the wide variety in processing equipment and final product, emissions cover a wide range.

Gaseous emissions may occur when the minerals are subjected to high temperatures such as in calcining or sintering operations. Fluorides are among the more common gaseous emissions. Gaseous emissions from fuel combustion also occur when heat is generated on site.

Particle size data is summarized for those processes in this section for which such information was available.

7.8 CONCRETE BATCHING

Process Description[1,2]

Concrete batching involves the proportioning of sand, gravel, and cemer by means of weight hoppers and conveyors into a mixing receiver such as a transit mix truck. The required amount of water is also discharged into the receiver along with the dry materials. In some cases, the concrete is prepared for on-site building construction work or the manufacture of concrete products such as pipe and prefabricated construction parts. Particulate emissions consist primarily of cement dust, but some sand and aggregate gravel dust emissions do occur during batching operations. There is also a potential for dust emissions during the unloading and conveying of concrete and aggregates at these plants and during the loading of dry batched concrete mix. Another source of dust emissions is the traffic of heavy equipment over unpaved or dusty surfaces in and around the concrete batching plant.

Factors Affecting Emissions

Factors affecting emissions include the amount and particle size of materials handled and the type of handling methods used. Enclosure of dumping and loading areas, and of conveyors and elevators, filters on storage bin vents and liberal use of water sprays will reduce particulate emissions. The degree to which dust control of traveled surfaces, and general plant housekeeping is practiced will also affect emissions.

Emissions

Very limited particulate emissions data were found in the literature. These data estimated emissions at 0.04 to 0.05 lbs of dust per ton of concrete.[3] This is equivalent to 0.08 to 0.1 lbs of dust per cubic yard while using good dust control procedures. Emissions of 0.2 lbs/cubic yard could probably be expected for some dusty operations.*

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* 1 yard^3 of concrete = 4000 pounds

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