2.6 Automobile Body Incineration

The information presented in this section has been reviewed but not updated since it was originally prepared because no recent data were found and it is rarely practiced today. Auto bodies are likely to be shredded or crushed and used as scrap metal in secondary metal production operations, which are discussed in Chapter 12 (Metallurgical Industry).

2.6.1 Process Description

Auto incinerators consist of a single primary combustion chamber in which one or several partially stripped cars are burned. (Tires are removed.) Approximately 30 to 40 minutes is required to burn two bodies simultaneously.[2] As many as 50 cars per day can be burned in this batch-type operation, depending on the capacity of the incinerator. Continuous operations in which cars are placed on a conveyor belt and passed through a tunnel-type incinerator have capacities of more than 50 cars per 8-hour day.

2.6.2 Emissions And Controls[1]

Both the degree of combustion as determined by the incinerator design and the amount of combustible material left on the car greatly affect emissions. Temperatures on the order of 650°C (1200°F) are reached during auto body incineration.[2] This relatively low combustion temperature is a result of the large incinerator volume needed to contain the bodies as compared with the small quantity of combustible material. The use of overfire air jets in the primary combustion chamber increases combustion efficiency by providing air and increased turbulence.

In an attempt to reduce the various air pollutants produced by this method of burning, some auto incinerators are equipped with emission control devices. Afterburners and low-voltage electrostatic precipators have been used to reduce particulate emissions; the former also reduces some of the gaseous emissions.[3,4] When afterburners are used to control emissions, the temperature in the secondary combustion chamber should be at least 815°C (1500°F). Lower temperatures result in higher emissions. Emission factors for auto body incinerators are presented in Table 2.6-1. Particulate matter is likely to be mostly in the PM-10 range, but no data are available to support this hypothesis. Although no data are available, emissions of HCl are expected due to the increased use of chlorinated plastic materials in automobiles.

Table 2.6-1 (English And Metric Units). EMISSION FACTORS FOR AUTO BODY INCINERATION[a]

EMISSION FACTOR RATING: D

Pollutants	Uncontrolled		With Afterburner	
	lb/car	kg/car	lb/car	kg/car
Particulates[b]	2	0.9	1.5	0.68
Carbon monoxide[c]	2.5	1.1	Neg	Neg
TOC (as CH_4)[c]	0.5	0.23	Neg	Neg
Nitrogen oxides (NO_2)[d]	0.1	0.05	0.02	0.01
Aldehydes (HCOH)[d]	0.2	0.09	0.06	0.03
Organic acids (acetic)[d]	0.21	0.10	0.07	0.03

[a] Based on 250 lb (113 kg) of combustible material on stripped car body.
[b] References 2 and 4.
[c] Based on data for open burning and References 2 and 5.
[d] Reference 3.

References For Section 2.6

1. *Air Pollutant Emission Factors Final Report*, National Air Pollution Control Administration, Durham, NC, Contract Number CPA-22-69-119, Resources Research Inc. Reston, VA, April 1970.

2. E. R. Kaiser and J. Tolcias, "Smokeless Burning Of Automobile Bodies", *Journal of the Air Pollution Control Association*, *12*:64-73, February 1962.

3. F. M. Alpiser, "Air Pollution From Disposal Of Junked Autos", *Air Engineering*, *10*:18-22, November 1968.

4. Private communication with D. F. Walters, U. S. DHEW, PHS, Division of Air Pollution, Cincinnati, OH, July 19, 1963.

5. R. W. Gerstle and D. A. Kemnitz, "Atmospheric Emissions From Open Burning", *Journal of the Air Pollution Control Association*, *17*:324-327. May 1967.