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Joaquin Telloz

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SOURCES OF ATMOSPHERIC POLLUTION AT THE U.S.-MEXICAN BORDER

JOAQUIN TELLOZ*

Mexican law provides punishment for those who waste or pollute water. On the other hand, contamination of the air is sometimes even more evident than contamination of water; yet, our attitude toward that problem is quite different. This is frankly contradictory, since the air is also available only in a limited capacity basin.

No one is forced to swim in or drink polluted waters, but contaminated air must be breathed by everyone. Clean air is everyone's legitimate right; yet, as long as we fail to understand this and accord it proper priority, we shall continue to make the air we breathe intolerable.

Originally, solid wastes could be stored for some time, with storage time reduced in the case of liquid residues; but, in the case of volatile and gaseous wastes, storage time is practically non-existent.

For some time, any urban nucleus that surpasses 50,000 inhabitants has been considered to have a potential danger of air pollution. On the U.S.-Mexican border there are a total of thirty-six such cities, fifteen in the U.S., and twenty-one in Mexico. Therefore, we must contemplate the possible existence of air pollution at the sites of twenty twin cities; sometimes the problem is shared, while at other places, the pollution may be on one side of the border, or even vary from one side to the other on the same day.

SOURCES OF POLLUTION

In simple and general terms, there are four possible sources of pollution.

First, because it is estimated that they are responsible for 50 percent of the problem, are internal combustion automotive vehicles, which contribute the following pollutants: carbon monoxide and dioxide; simple hydrocarbons; oxygenated and polynuclear hydrocarbons; nitrogen of oxide and sulphur; aldehydes; acids; phenols; lead salts; and volatile particulates. As a

*Ingeniero, Secretaria de Salubridad y Asistencia, Mexico.

result of the variants in the process of combustion, it can also be considered that ten percent of the gasoline available for the combustion goes into the atmosphere. Control of such pollution basically depends on technological advances presently under development.

Second is generation of electric and calorific energy. The imperfect combustion translates itself into the separation of fumes mainly made up of sulphur and nitrogen oxides, unburned hydrocarbons, and particulate matter. This problem is present wherever there is a boiler fed by basic fossil fuels, whether gaseous, liquid, or solid.

Three Mexican border cities operate thermoelectric plants: the smallest is in Ciudad Juarez, Chihuahua, with an installed capacity of 15,000 kilowatts; the second in Rio Bravo, Tamaulipas, with 37,500 kilowatts; and the largest, 307,000 kilowatts, in Rosarito, Baja California (just south of Tijuana), which works in conjunction with a desalinization plant.

Power generation is now estimated to cause about fifteen percent of the total pollution problem.

Third in the sources of air pollution is the elimination of wastes, which contributes in a significant way to the problem as a result of the activity of social groups that generate waste in quantities that surpass the growth rate of these groups. This situation is common to almost all border cities, in direct relation to the method or methods followed for waste disposal by any particular city. A 1969 study of the twenty-one Mexican border cities showed that the total garbage collected in all of these cities was 1,240 tons per day, or 384,400 tons per year. These numbers refer to garbage that accumulates out-of-doors, in a process common to all of Mexico's cities. Generally, the selection and recovery of usable materials is a practice followed directly by the municipality, or granted as a concession to private persons; unusable portions are burned sporadically, with some regular control in only three cities.

The simple burning of garbage presents the following characteristics with relation to atmospheric pollution: comparatively with incineration, it causes ten times more pollution; the contribution of particulate matter (that is, those large volumes of gases that contain solid matter) is thirty percent; odors and gases offensive to the senses are released; a great variety of unsaturated hydrocarbons, some of which may be carcinogens for animals

and man, may be released; and multiple generation over a relatively large area makes monitoring and control of the emissions almost impossible. Obviously, present practices of garbage disposal must be changed.

Fourth, and estimated to be responsible for thirty percent or more of air pollution in specific areas, is industrial activity. This is due to the great diversity of industrial activities that can occur in the manufacturing process, and the different options that may be present for similar processes. Industrial pollution control developments in the thirty-six border cities are generally null or incipient. However, there are the following important exceptions: a) The Reynosa-Rio Bravo area is the site of a considerable industrial complex including a petroleum refinery which is the most important element of the local air pollution problem. This complex plans for immediate control of its emissions and, in fact, lines of study and control have been established to accomplish this; b) the twin cities of Piedras Negras-Eagle Pass are the site of an important metallurgic industry. Last March, sampling stations were installed for the technical study of air pollution problems, with systems compatible in both cities; c) in El Paso, Texas, and Douglas, Arizona, unilateral measures are being taken with respect to the important metallurgic industries situated there, that contribute emissions in proportion to their importance.

The problems involved in air quality along the Mexico-United States border are thus rather easily defined; yet the solution to those problems is not easy. Much can be accomplished, however, by strict enforcement of the legislation of the federal and state governments of the United States and the new regulation on smoke and dust control of Mexico. Should both countries now begin in earnest to implement this legislation, they will have gone a long way toward the goal of helping the people on both sides of their common border.