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1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

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MINORITIES AND SUBSTANDARD AIR QUALITY¹

D. R. Wernette and L. A. Nieves

Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

Scientists at Argonne National Laboratory have been studying the relative potential for exposure of minority population groups to substandard outdoor air quality. The U.S. Environmental Protection Agency (EPA) has identified areas that have excess levels of ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, or particulate matter. These areas generally consist of counties covering many square miles, and the degree to which their residents are exposed to air pollution certainly varies. However, the differences in population groups living in these areas can imply differences in potential exposure to pollutants and may suggest directions for research and remedial action. So far, the scientists have examined these differences for African-Americans, Hispanics, and Whites (non-Hispanic).

In the United States, excluding Alaska and Hawaii, higher percentages of both African-Americans and Hispanics live in areas with reduced air quality than is the case for Whites. For instance, 52% of all Whites live in counties with high ozone concentrations, while the same is true for 62% of all African-Americans and 71% of Hispanics. Similar differences between the distributions of these population groups

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are found for the other pollutants as well. These minority-majority differences in potential exposure to pollutants may be partially due to differences in minority population distributions across regions. Hispanics, for example, are more concentrated in the West, where there is a greater tendency than elsewhere for the total population to be exposed to high levels of ozone.

The differences in distribution of minorities and Whites among regions do not account for all of the differences in their potential exposure to reduced air quality, however. Percentages of minorities in substandard air quality areas are not only higher for the country as a whole, but are also higher when the four U.S. Census regions are considered separately. For example, 50% of Whites in the Northeast Census region live in areas with excessive carbon monoxide. In contrast, 85% of northeastern African-Americans and 88% of northeastern Hispanics reside in those areas.

In 1990, 437 of the 3,109 counties and independent cities in the United States failed to meet at least one of the EPA ambient air quality standards. Of these counties, 136 had excessive levels of two or more pollutants, 29 exceeded standards for three or more pollutants, 7 exceeded standards for four or more pollutants, and 1 exceeded standards for five pollutants. To what extent do the proportions of Whites, African-Americans, and Hispanics living in these counties differ? As Figure 1 shows, 57% of all Whites, 65% of African Americans, and 80% of Hispanics live in the 437 counties with substandard air quality. Out of the whole population, a total of 33% of Whites, 50% of African-Americans, and 60% of Hispanics live in the subgroup of 136

counties in which two or more air pollutants exceed standards. The percentages living in the 29 counties designated as nonattainment for three or more pollutants are 12% of Whites, 20% of African-Americans, and 31% of Hispanics. Finally, 5% of Whites, 10% of African-Americans, and 15% of Hispanics live in the seven counties that exceed standards for four or more pollutants. In short, the percentage of minority populations in these areas is consistently greater than the percentage of Whites as the number of air pollutant criteria that are exceeded increases from one to four or more.

The right-most bar in Figure 1 shows the percentages of the population with incomes below the poverty level in relation to the number of pollutants that exceed standards. Regardless of the number of pollutants that exceed standards, lower percentages of poor people (from all population groups) are potentially exposed than percentages of either African-Americans or Hispanics. This is the case for one or more pollutants (poor = 54%, compared to African-Americans = 65%, and Hispanics = 80%), as well as for four or more pollutants (poor = 7%, compared to African-Americans = 10%, and Hispanics = 15%). This is noteworthy, because both African-Americans and Hispanics have above-average percentages of their populations with incomes below the poverty line. One might expect such income differences to cause the differences in percentages of the population living in substandard air quality areas shown here, and, indeed, low income may contribute to the patterns observed. However, the comparison between poor, African-American, and Hispanic percentages shows that these minority groups are more concentrated in such counties than the poor population in general, and suggests that more than low income is a factor in the

above-average percentages of African-Americans and Hispanics in areas with reduced air quality.

Air pollutants that cause substandard air quality come from many and varied sources including traffic, industry, and even that cozy fire in the fireplace. Industrial and electricity-generating facilities are major sources of some of the contaminants of concern. For that reason, the relationship between minority population percentages and concentrations of such facilities is also of interest.

Air-polluting facilities are not evenly distributed over the four regions of the country or between urban and rural counties. Almost half of the nearly 3,000 major air-polluting facilities nationwide are in the South, followed in order by the North Central, West, and Northeast regions. Likewise, 63% of the facilities are in urban (Metropolitan Statistical Area) counties. Of all U.S. counties considered urban, only 12% have high percentages of minorities (greater than 31%), but these high-minority counties contain 21% of all urban facilities. Thus, the air-polluting facilities are disproportionately concentrated in counties with high minority population percentages. Specifically, among urban counties, those with high minority population concentrations have more than twice as many air-polluting facilities as those with below-average (less than 14%) minority populations.

We find that the air quality and air-polluting facilities analyses tell the same story: minorities live in greater concentrations both in areas with above-average numbers of air-polluting facilities and in air-quality problem areas. Why this is the case is the focus of our continuing research. Whatever the reason(s), these patterns have

important implications because of the lack of correspondence of the costs and benefits of these facilities. The gasoline, electricity, chemicals, and other goods from these facilities may benefit individuals around the world, but the pollution-related health and economic costs of the facilities are more likely to be borne by those in the adjacent areas, who are identified by this research as disproportionately African-Americans and Hispanics.

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**Figure 1: Percentage of Population by
Number of Air-Quality Standards Exceeded**

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