What causes acid deposition?

Acid deposition is caused primarily by the emission of sulfur and nitrogen oxides from the burning of fossil fuels by electric utilities and motor vehicles.

SUMMARY: Electric utilities account for the greatest proportion of sulfur dioxide emissions in the United States. The transportation sector, however, is the largest source of nitrogen oxide emissions. Ammonia emissions derive largely from livestock waste and fertilized soil.

DETAILS: In 1997, the major sources of sulfur dioxide emissions were electric utilities (60 percent), industrial combustion (17 percent), and industrial processes (8 percent). Transportation sources — including cars, trucks, and non-road vehicles (i.e., construction equipment) — accounted for more than 50 percent of all nitrogen oxide emissions. Other major sources of nitrogen oxides include electric utilities (26 percent) and industrial combustion (14 percent). According to regional studies conducted by the United States Environmental Protection Agency (EPA) since 1990, agricultural activities, in particular manure handling, constitute the largest source of ammonia emissions. Motor vehicles and industrial processes also contribute to ammonia emissions.

Electric utilities account for the greatest proportion of sulfur dioxide emissions in the United States.

Where does acid deposition originate?

The mid-western United States emits the greatest amount of sulfur and nitrogen oxides of any region in the nation.

SUMMARY: Emissions of sulfur dioxide are highest in the mid-western United States (hereafter the Midwest), with seven states in the Ohio River Valley accounting for 41 percent of total national emissions in 1997.[2]

DETAILS: Analysis of continental air currents shows that the seven states in the Ohio River Valley comprise the dominant source area for sulfur dioxide emissions that travel downwind to the Northeast (see Figure 3). Five of these states are also among the highest emitters of nitrogen oxides and contributed 20 percent of total national emissions in 1997.[3] Moreover, the Midwest is a significant source of atmospheric ammonia. In addition to pollution sources in the Midwest, local emissions of sulfur dioxide and nitrogen oxides from electric utilities and motor vehicles have significant impacts on local air quality in the Northeast.

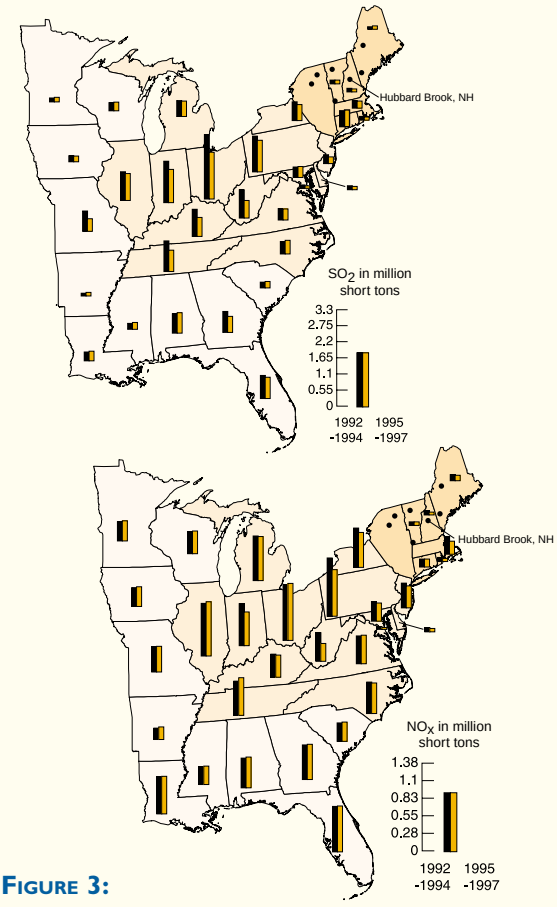

FIGURE 3: *Spatial patterns of sulfur dioxide and nitrogen oxide emissions in the eastern United States. The shaded area shows the source area from which pollution travels downwind to the Northeast.*

[2] *Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Tennessee, and West Virginia.*
[3] *The same states as above, minus West Virginia and Kentucky.*