Index
Index

Acid deposition, 3, 5, 9, 10, 11, 12, 13, 15, 16, 27, 28, 42, 49, 80, 81, 83, 87, 106-110, 124, 212
Adirondacks, 5, 13, 14, 44, 81, 82, 112, 213, 230
Advanced Statistical Trajectory Regional Air Pollution Model (ASTRAP), 280
Agricultural productivity, adverse effects, 12, 90, 217
Air Quality Control Regions (AQRs), 136
Alabama, 63, 85, 90, 98, 125, 126
Appalachians, 50, 51, 83, 98, 127, 141, 196, 226
Arkansas, 52, 90
Atmospheric processes, 265-299
Chemistry, 265-273
Altering emissions of primary pollutants, 269
Deposition of sulfur and nitrogen, 265
Oxides of nitrogen, 267
Oxides of sulfur, 266
Ozone, 268
Source-receptor relationships, 274-299
Acid-producing substances, 274
Contributions to acidic deposition, 279
Effectiveness of emissions reductions for achieving deposition reductions, 286
Relationship between current emissions and deposition, 279
"Target" deposition rates, 289
Brookhaven National Laboratory, 255
Business Roundtable, 29
Canada, 3, 5, 13, 29, 30, 31, 43, 47, 48, 119, 120, 125, 213, 302-305, 307
Center for Air Pollution Impact and Trend Analysis, 253
Congress:
House Committee on Energy and Commerce, 27
Senate Committee on Environment and Public Works, 27
Congressional interest, 41-48, 80-90, 105-120, 123, 146
Connecticut, 52
Council on Environmental Quality (CEQ), 117
Domestic and international approaches, 300-318
Clean Air Act, 300
Control of transboundary pollution, U.S.-Canada, 302-305
Interstate pollution control and the Clean Air Act, 300
International programs, 305
Canada, 307
Denmark, 310
Europe, 305, 306, 307
Japan, 311
Norway, 309
Sweden, 308
United Kingdom, 310
West Germany, 310
Mitigating the effects of acid deposition on aquatic resources, 312
Liming materials, 313-318
Edison Electric Institute, 192
Effects of transported pollutants, 207-264
Aquatic resources, 207-216
Effects of acid deposition, 212
Economic sectors, 261
Health risks, 255-261
Acid precipitation, 259
Nitrogen oxides, 258
Materials, 239-244
Terrestrial resources, 217
Agricultural productivity, 217
Effects of acid deposition, 228
Effects of acid rain, 218
Effects of multiple pollutants on forests, 224
Effects of ozone on forest productivity, 227
Visibility, 244
Factors affecting, 244-248
Key studies, 253
Measurement techniques, 252
Mechanisms of degradation, 248
Electric Power Research Institute, 279
Emissions, 57-63, 106-111, 149-206
Control technologies, 153-167
Nitrogen oxides, 166-167
Flue-gas treatment, 167
Sulfur dioxide, 157
Coal cleaning, 158
Dry processes of FGD, 165
Flue-gas desulfurization, 164
Fluidized bed combustion, 164
Fuel-switching, 157
Limestone injection multistage burner (LIMB), 163
Oil desulfurization, 163
Regenerable processes, 166
Wet scrubbers, 164
Cost of control, 149, 167-180
Overview of model used in cost analyses, 178
State-bystate reductions, 170-178
Current and historical, 57, 58
Future, 59
Hydrocarbon, 61
Nitrogen oxides, 59
Sulfur dioxide, 59
Utility sulfur dioxide, 61, 62
Industrial and commercial boilers, 183
Industrial processes, 183-185
Mobile sources, 185
Trends in highway vehicle emissions, 187
Legislating, 123-146
Secondary economic effects of programs, 190-206
Coal production and related employment, 190
Employment forecasts, 194
Methods of projecting production, 192
Patterns of change, 195
Reserves and current production, 190
Electricity-intensive industries, 199-201
Utilities in the eastern 31 states, 201-206
Acid Rain and Transported Air Pollutants: Implications for Public Policy

state regulatory policies, 203
tax strategies, 180-182
Energy & Resource Consultants, Inc., 183
European Economic Community (EEC), 306

Federal Aviation Administration, 244
Federal concern, 29
Florida, 49, 52, 126
Ford, 189
forest productivity, 12, 89

General Electric, 163
General Motors, 189
gEOGRAPHICAL patterns of deposition and air concentrations for transformed pollutants, 63
Georgia, 63, 83, 85, 125, 126
Great Smoky Mountain National Park, 213

Harvard School of Public Health, 256
ICF, Inc., 192, 193
Illinois, 12, 49-50, 82, 90, 142, 195, 242
Indiana, 12, 49, 50, 64, 82, 90, 142
Interagency Task Force, 105, 114, 118
interstate coal shipment, 142
Iowa, 82, 90
Kentucky, 46, 49, 50, 81, 82, 98, 142, 190, 195

legislating emissions reductions, 123, 146
By what time should reductions be required?, 130
How should emissions reductions be allocated?, 133
How widespread should a control program be?, 125-126
What approach to control should be adopted?, 131
What can be done to mitigate employment and economic effects of a control policy?, 140
What level of pollution control should be required?, 126
Which pollutants should be further controlled?, 123-125
Who should pay the costs of emissions reductions?, 138

legislation:
Acid Precipitation Act of 1980, 21, 23, 105, 114, 115, 117, 118
Airline Deregulation Act of 1978, 143
Clean Air Act, 3, 5, 15, 23, 24, 27, 29, 35, 36, 48, 59, 105, 106, 109, 118, 119, 120, 132, 139, 141, 142, 145, 189, 199, 244, 255, 300, 301, 302, 308
Dingell-Johnson Act, 112, 13, 114
Trade Act of 1974, 143
liming lakes and streams, 19, 129, 111-114
Limestone Injection Multistage (LIMB), 144
Louisiana, 126

Maine, 52, 82, 90, 119
Memorandum of Intent, 48, 119
Michigan, 52, 142
Minnesota, 48, 82, 209
Mississippi, 63, 90, 107, 125, 126
Missouri, 49, 90, 126, 142
National Academy of Sciences, 29, 53, 117, 289
National Air Quality Standards (NAAQS), 23, 105, 118, 119, 120, 131, 132, 133, 136, 285
National Clean Air Coalition, 192
National Commission on Air Quality, 28
National Crop Loss Assessment Network (NCLAN), 217
National Governors’ Association, 28
National Wildlife Federation, 192
New England, 5, 12, 13, 48, 53, 80, 83, 125, 127, 224, 231
New Hampshire, 82, 90, 114
New Jersey, 44, 81
New Source Performance Standards, 61, 129, 131, 195
New York, 48, 82, 112, 119, 125, 183, 214, 231, 242
New York State Department of Environmental Conservation, 112, 113
North Carolina, 17, 64, 81, 82, 90, 107, 126
Norway, 82, 230
Nova Scotia, 82, 214
Oak Ridge National Laboratory, 208, 230
Ohio, 5, 12, 49, 50, 63, 82, 111, 114, 195
Ontario, Canada, 82, 125, 213, 214
Ozark Mountains, 85
ozone, 4, 7, 11, 12, 13, 27, 33, 34, 85, 86, 227, 228, 268
Pennsylvania, 5, 49, 50, 52, 63, 82, 98, 111, 114, 119, 127, 183, 278
policy debate, characteristics of, 30-31
policy options, 15-24, 105-120
current law and recent proposals, 105
liming lakes and streams, 18, 106, 111-114
mandatory emissions reductions, 16, 106-111
modifying existing provisions of the Clean Air Act, 23, 106, 118-120
modifying the current research program (NAPAP) to provide more timely guidance to Congress, 21
modifying the Federal acid deposition research program, 115-118
pollutants of concern, 4-9, 57-75
hydrocarbons, 4, 27, 57-75, 123-146
nitrogen oxides, 4, 5, 7, 8, 12, 27, 49, 57-75, 93, 95, 105, 106, 123, 146, 149-167
sulfur dioxide, 4, 5, 7, 8, 9, 12, 15, 16, 27, 49, 57-75, 92, 95, 96, 97, 105, 107, 123-146, 149-180
precipitation acidity (pH), 5, 6, 9, 42, 125, 126, 213, 224, 225, 266
public concerns, 28
Redwoods National Park, 143
regional distribution of risks, 79-101
aquatic ecosystems, 80
health effects, 94
materials, 91
rates of pollutant emissions, 94
shifts in coal production, 97-101
terrestrial ecosystems, 82
utility industry, 95
visibility, 91
risk and uncertainty, 31-32
regional patterns of sulfur oxides transport, 64-75

San Bernardino Mountain Study, 228
scientific uncertainties, 32-37
current damages, 32
effectiveness of reducing emissions, 36
future damages, 33
origin of observed levels of transported pollutants, 34
research program, 36
State Implementation Plans (SIP), 61, 118, 120, 167, 178, 301
Stockholm Conference on the Acidification of the Environment, 1982, 29, 53
South Carolina, 64, 85
Sweden, 82
Tennessee, 12, 17, 44, 49, 50, 81, 107, 126
Tennessee Valley Authority (TVA), 164, 165
The Institute of Ecology (TIE), 207, 209
transported air pollutants, 41-54
effects on utility and industrial financial health, 51
effects on U.S. coal market, 50
resources at risk, 41
aquatic ecosystems, 41
terrestrial ecosystems, 43

risks of health effects, 47
risk of strained international relations, 48
utility control costs, 49

United Mine Workers, 142, 198, 199
University of Illinois, 256
U.S.-Canada Memorandum of Intent on Transboundary Air Pollution, 53, 120, 149, 181, 242, 279, 289
U.S. Census Bureau, 199
U.S. Chamber of Commerce, 29
U.S. Department of Agriculture (USDA), 218
U.S. Department of Energy, 29, 149, 161, 183, 192
U.S. Environmental Protection Agency (EPA), 18, 19, 23, 24, 29, 35, 46, 48, 105, 106, 108, 110, 117, 118, 119, 120, 128, 129, 131, 143, 144, 149, 161, 178, 185, 189, 192, 217, 259, 300, 301
U.S. Fish and Wildlife Service (FWS), 113, 114
U.S. Forest Service, 85
U.S. Geological Survey, 208

Vermont, 12, 44, 45, 52, 82, 90, 114
Virginia, 44, 47, 52, 81, 98
West Germany, 44, 118, 230
West Virginia, 5, 49, 56, 63, 81, 82, 98, 127, 143, 161, 190, 195, 278
Wisconsin, 48, 82