

Subject Index

1,1,1-trichloro-2,2-bis-(4-chlorophenyl)-ethane, See DDT
10 X rule, 216
10, 10'-oxybis(phenoxarsine) (OBPA), 298–299
100-year flood, 184–185
2001: A Space Odyssey, 119
2-naphthylamine (β -naphthylamine), 190, 217

Absorbed dose, 165
Absorptive potential, 269
Acceptable daily intake (ADI), 211
Accident prevention, 295
Acid rain, 241, 244–248
Activator protein-1 (AP-1), 202
Activities, 154
Acute exposure, 202
Acute toxicity, 167
Addition, chemical, 342
Adirondacks, 247
Advocacy, 338
Aerial acid (CO_2), 288
Aerobic digestion, 344
Aerosols, 269, 270, 285, 341. *See also* Particulate matter (PM)
Affirmative action, 40–41
Agenda 21, 287
Agonist, 271
Air conditioning, 264
Air–water partitioning, 178
Alabama Department of Public Safety, 14
Alaska pipeline, 239
Albedo, 266
Aldehydes, 205, 258
Aldrin, 98, 272
Alexander v. Sandoval, 12–13, 15
Allied Chemical Company, 98–100
Aluminum (Al), 247
American Electric Power, 309, 310

American Medical Association, 96
American Smelting and Refining Company, 146
American Society of Civil Engineers (ASCE), 60, 61, 94, 115
American Society of Engineering Education, 116
American Society of Mechanical Engineers (ASME), 290
Ames test, 165
Ammonia, 258
Amsterdam, The Netherlands, 139
Anaerobic digestion, 100, 344
Analogy, 221
Anglovaal Head, 327
Antagonism, 171, 271, 327
Antagonist, 271
Antarctic, 264, 265
Anticarcinogen, 170
Anticyclone, 185
Apollo program, 123
Applied dose, 165
Aquic hapludult soil, 12
Arsenic (As), 83–86, 90–91, 146, 298–299
Arsine, 288
Artificial nose, 260
Asbestos, 86–88
Asbestosis, 86–88
ASCE, *see* American Society of Civil Engineers (ASCE)
ASME, *see* American Society of Mechanical Engineers (ASME)
Asthma, 255
Astros Field, Houston, 278
Atom economy, 293
Auschwitz, 335
Australia, 86, 265
Australian National Occupational Health and Safety Commission, 86

- B-29, 122
 Ballistics, 120
 BANANA, *see* Build Absolutely Nothing Anywhere Near Anything (BANANA)
 Bangladesh, 90–91, 147
 Barrel burning, 254–255, 285
 Base-catalyzed decomposition (BCD), 33–34
 Basic needs, 289–290
 Bathtub curve, 161–162
 Baton Rouge, Louisiana, 180
 Battle of Saratoga, 63
 Bayes theorem, 137
 Bayesian belief network, 163
 BCD, *see* base-catalyzed decomposition
 Benefit-to-cost (B/C) ratio, 45–46
 Benzene, 190, 258, 260
 Berlin Air Lift, 66
 Bernoulli equation, ix
 Best available control technology (BACT), 212
 Bhopal, India, 135, 139, 183
 Bias, 83
 Bicarbonate ion, 284
 Bioaccumulation factor (BAF), 186
 Bioaccumulation, 186, 345
 Bioactivation, 172
 Biochemical oxygen demand (BOD), 78
 Biocide, 298–299, 307
 Bioconcentration, 167
 Bioconcentration factor (BCF), 186
 Bioeffective dose, 165
 Biologic gradient, 221
 Biological treatment, 108
 Biomarker, 187, 189
 Biomedical Engineering Society, 96
 Biotransformation, 344
 Birds, predatory, 271
 Birmingham, England, 288
 Black box mass balance, 305
 Blast furnace, 258
 Blowdown, 307
 BOD, *see* Biochemical oxygen demand (BOD)
 Boeing 707, 113
 Boeing 727, 66
 Boeing 737, 66
 Boeing Corporation, 62
 Bolsheviks, 64
 Boston Society of Civil Engineers, 61
 Botswana, 112
 Brick-making, 251
British Medical Journal, 222
 Brooklyn Bridge, 61
 Brown University, 77
 Brownfield, 25, 277–279
 Brownfields Redevelopment Program, 278
 Brownsville, Texas, 253–255
 Brundtland Commission, 287–290
 Bucks County, Pennsylvania, 308
 Bucknell University, vii, 141
 Buddhism, 94
 Build Absolutely Nothing Anywhere Near Anything (BANANA), 26
 Burma, 66
 Butane, 251
 Butterfly Effect, 318
 Butyl rubber, 249
 Cadmium (Cd), 257, 285
 Cal Tech, 245
 Calcium (Ca), 159
 Calcium carbonate (CaCO_3), 246–247
 Canada, 248, 309
 Cancer Alley, 180–182
 Cap and trade, 296
 Carbon dioxide, 30, 231, 244, 268, 269, 270, 284, 288, 289, 299, 302
 Carbon monoxide, 30, 143, 258
 Carbonate ion, 284
 Carbonic acid, 247, 284
 Carcinogen, 141–143, 146–147, 149, 180
 Cardinal virtues, 94
 CARE, 57
 Carelessness, 111
 Carrboro, North Carolina, 25–26
 Carver Terrace, Texas, 9–10
 Case study, xi
 Case-by-case approach, 19
 Cast iron, 256
 Castell-Y-Bere, 120
 Catalysis, 293
 Catalytic converter, 30–31, 36
 Categorical imperative, 63, 256
 Causality, 218
 Cause-and-effect diagram, 161
Caveat emptor, 132, 332
 CBS News, 126–127
 Centers for Disease Control, 100
 Central Park, New York City, 80
 CFC, *see* Chlorofluorocarbon (CFC)
 Challenger Space Shuttle, vii, 100

- Chamber study, 245
 Chapel Hill, North Carolina, 8, 22–27
 Chemical bonding, 340
 Chernobyl, Ukraine, 195, 231
 Cherokee, 41
 Chesapeake Bay, 214
 Chicago, Illinois, 152, 297
 Chiral, 344
 Chlordecone, 98–100, 272
 Chlorine (Cl) atom, 264–265, 301
 Chlorine dioxide, 301
 Chlorobenzene, 249
 Chlorofluorocarbon (CFC), 263–266, 301
 Chlorophyll, 288
 Cholera, 222
 Christianity, 94
 Chromic acid mist, 211
 Chromium (Cr), 136, 192–194, 285, 307
 Chronic disease, 39
 Chronic exposure, 202
 Chronic toxicity, 167
 Chrysotile, 86
 Cigarette smoking, 222, 297
 Cinergy, 309
 Circle of poison, 98
 Citicorp Building, 111, 329–332
 Ciudad Juarez, Mexico, 251
 Civil engineering, 60
 Civil Rights Act, x, 11–12, 13, 29
 Civil War, 22, 80
 Clean Air Act, 105, 309
 Clean Water Act, 105
 Cleanup standard, 212–217
 Coal, 232, 242, 258
 Coal-tar pitch, 258
 Code of ethics, 2, 3, 94–96, 101–102
 Coherence, 221
 Coke oven emissions, 258
 Coke, 258
 Cold War, 123, 124
Colonia, 251
 Color number, 92
 Colorado School of Mines, 108
 Columbia County, New York, 27
 Combined sewer overflow (CSO), 80
 Combustion, 249–252, 262, 301–302
 Command and control, 296
 Commercial fertilizer, 259
 Common parameter checklist, 236
 Community input, 241
 Compartmental thinking, ix, 144
 Completed exposure pathway, 202
 Composition, ecological, 279
 Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 175
 Computational toxicology, 274
 Concentration camp, 73
 Concurrent engineering, 297–299
 Conditional probability, 137
 Confined animal feeding operation, 259–260
 Confucianism, 94
 Congener, 5, 175, 191–192, 344
 Congo, 56
 Consistency, 220
 Consolidated Vultee Air Corporation (Convair), 68
 Constitution, United States, 1, 2
 Continental Congress, 63, 121
 Contractarianism, 62, 262
 Contras, 126
 Convair, *see* Consolidated Vultee Air Corporation (Convair)
 Cooling, global, 269
 Copper (Cu), 256
 Coriolis Effect, 185
 Cornell University, 105
 Corporate discrimination, 29
 Corps of Engineers, U.S. 118, 60, 111, 122, 218
 Correlation, 327
 Corrosivity, 166
 Co-solvation, 341
 Council on Environmental Quality, 232
 Creativity, 318
Credat emptor, 127, 132, 332, 337
 Creosote, 9, 258
 Critical flow, 50
 Critical path, 171
Crito, 62
 Crusades, 120
 CSO, *see* Combined sewer overflow (CSO)
 Cyanide, 192, 276
 Cyclone, 185
 Cyclooxygenase-2 (COX2), 202
 Cytochrome P-450, 188
 Data mining, 292
 Data validation, 79
 Data verification, 79
 Day of Peace, 131

DC-10, 66–73
 DC-3, 66
 DC-4, 66
 DC-5, 66
 DC-6, 66, 112
 DC-7, 66
 DC-9, 66
 D-Day, 121
 DDD, 177, 227
 DDE, 177, 227
 DDT, 97–98, 130, 177, 178, 214, 227, 236, 271, 272, 273
De facto discrimination, 12
De Ratiociniis in Ludo Aleae, 135
 Dead Sea, 248
 Declaration of Independence, 1
 Deepwater, New Jersey, 310
 Deer, 144
 Dehumanization, 29
 Democracy, 2, 338
 Dense nonaqueous-phase liquid (DNAPL), 276–277
 Denver, Colorado, 243
 Deontology, 53, 63, 256
 Deoxyribonucleic acid (DNA), 171, 196
 Derivatives, chemical, 293
 Dermal exposure, 260
 Design elements, 323–329
 Design for degradation, 294
 Design for disassembly (DFD), 296
 Design for recycling (DFR), 296
 Design for the environment (DFE), 296
 Detection limit, 143
Detroit Free Press, 18
 Detroit, Michigan, 21, 297
 DFD, *see* Design for disassembly (DFD)
 DFE, *see* Design for the environment (DFE)
 DFR, *see* Design for recycling (DFR)
 Dialects, 225
 Dibromochloropropane (DBCP), 190–191
 Dieldrin, 98, 272
 Diffusion, 343
 Digital divide, 106
 Dihydrogen monoxide, 147
 Dioxin, 174–176, 257, 260, 262, 271, 272, 340
 Disaster, 145, 147
 Disparate effects, 3
 Disparate exposure, 4
 Disparate opportunity, 4
 Disparate protection, 4
 Disparate susceptibility, 3
 Dispersion, pollutant, 276–277

Dissociation, chemical, 342
 Diversity, ecological, 279–282
 DNA, *see* Deoxyribonucleic acid (DNA)
 DNAPL, *see* Dense nonaqueous-phase liquid (DNAPL)
 Dolomite, 246–247
 Donora, Pennsylvania, 146
 Dose-response curve, 167–170, 237
 Dose-response, 165, 196, 279
 Douglas Aircraft, 66–67
 Dow Chemical, 190, 310
 Drake Chemical Company, 217–218
 Driver's education, 108–110
 Dual use, 125
 Duke Forest, 23, 25–26
 Duke University, vii, x, 23, 50, 141, 260
 DuPont, Corporation, 263, 266, 310, 311
 Durham, North Carolina, 128–129
 Duty ethics, 53, 63, 256
 Earth Liberation Front (ELF), 311
 Earth Summit, 287
 Earthquake, 145
 East St. Louis, Illinois, 259
 Eco-imperialism, 98
 Ecole Polytechnique, 93
 Ecological risk assessment, 279–273
The Ecology of Commerce, 313
 Ecosystem, 279–283
 Eco-terrorism, 311
 Efficiency, 36
 Eggshells, 271
 Egoism, ethical, 336
 Egypt, 251
Einfühlung, 53–54
 EIS, *see* Environmental impact statement (EIS)
 El Paso Natural Gas, 253
 El Paso, Texas, 251
 Elephants, 59
 Elimination, chemical, 342
 Eminent domain, 7, 184
 Empathy, 51, 53–54, 94
 Endocrine disruptor, 180, 271–274
 Energy efficiency, 294, 300
 Engineers without Borders, 125, 339
 Environmental assessment, 7, 150, 152, 233–240
 Environmental Defense (ED), 253
 Environmental equity, 2–3
 Environmental impact statement (EIS), 232, 238–240

- Environmental inventory, 233
 Environmental justice (EJ) communities, 2, 4
 Environmental justice, definition of, 2–3
 Environmental racism, xii, 2
 Environmental risk management, 322
 EPA Method 300.1, 205–206
 Epidemiology, 223, 282
 Equal protection, 2
 Equilibrium, 177–179
 Essential substances, 226, 227
 Ethanol, 188–189
 Ethical decision-making, 102–103, 312–313
 Ethics, international, 248
Ethike arētai, 94, 334
 Ethoxresorufin-O-deethylase (EROD), 188
Euthyronon, 120
 Eutrophication, 274–275
 Evaluation, 233
 Event, dependent, 136
 Event, independent, 136
 Everglades, 118, 282
 Excellence, 92
 Excess lifetime cancer risk (ELCR), 196
 Executive Order 12898, 11, 30–31, 229–230
Existential Pleasures of Engineering, 118, 334
 Existentialism, 54
 Experimentation, 221
 Explorer 1, 123
 Exposure Factors Handbook, 154
 Exposure pathway, 202, 210
 Exposure, definition of, 204
 Extreme value theory, 201
- FAA**, *see* Federal Aviation Administration (FAA)
 Failure density, 160
 Failure, 110–117, 145, 297–299, 334
 Fair distribution, 41
 Fair, 39, 45–46, 309, 322
 Fairbanks, Alaska, 112
 Fairness, definition of, 37–41
 Faithful agent, 2, 3
 False negative, 170
 False positive, 171
 Favoritism, 42–43
 Federación Mexicana de Asociaciones Privadas de Salud y Desarrollo, 253
 Federal Aviation Administration (FAA), 67
 Federal Bureau of Investigation, 214
 Federal Emergency Management Agency, 184
- Federal Register*, 240
 Federal Water Pollution Control Act, 99–100
 Fibers, 86
 Fick's law, ix
 Financial considerations, 310–312, 326
 Finding of no significant impact (FONSI), 233
 Fire air (O_2), 288
 Fire, 249–262
 Firebombing, 122
 FirstEnergy, 309
 Fishbone diagram, 161–162
 Flint, Michigan, 18
 Fluid dynamics, 50, 318
 Fluid, 275
 FONSI, *see* Finding of no significant impact (FONSI)
 Food chain, 273, 290, 345
 Forcing, 269
 Free radical polymerization, 256–257
 French Equatorial Africa, 56
 French Revolution, 288
 Freon (trade name), 263
 Fuel type, 112
 Fugacity, 341
 Function, ecosystem, 324
 Future Engineer (FE) examination, 131
- Gary, Indiana, 21
 Gas transfer, 308
 Gaussian distribution, 137
Génie, 60–62
 Genomics, 274, 292
 Geographic information system (GIS), 327
 Geostatistics, 327
 Germ theory, 187
GHE, *see* Greenhouse gas equivalent (GHE)
GIS, *see* Geographic information system (GIS)
 Global climate change, 241, 248, 266–271
 Glucose, 289
 Goiania, Brazil, 195
 Golden Rule, 53
 Golf, 44
Gonzaga v. Doe, 15
 Gouging, 58
 Granite City, Illinois, 257–258
 Grass carp, 279
 Greeks, 274, 334
 Green chemistry, 274
 Green decision-making model, 315–316

Green engineering, definition, 290–297
 Greenhouse gas equivalent (GHE), 301
 Greenhouse gas, 185, 231–232, 266–271, 301
 Groundwater, 155, 160
Groundwork of the Metaphysics of Morals, 63
 Growth needs, 289–290
Guardian Association v. Civil Service Commission, 12, 15

Habitat for Humanity, 8, 336
 Half-life, 99, 174, 181
 Halocarbons, *see* Chlorofluorocarbons (CFC)
 Harm principle, 53
 Harvard University, 78, 93, 123, 146, 149, 329
 Hazard, 142, 151–153
 Hazard identification, 164–167
 Hazard index (HI), 211–212
 Hazard quotient (HQ), 211
 Hazard rate, 160
 Hazardous and Solid Waste Amendments, 286
 Hazardous waste, 83–84, 274–279
 HCFC, *see* Hydrochlorofluorocarbon (HCFC)
 Health, vii, 57, 65, 101
 Healthy worker syndrome, 78
 Heat transfer, 103
 Heat, 266–269
 Henry's Law Constant, 177–178, 341
 Hepatic angiosarcoma, 180
 Hepatitis, 111
 Heritage Foundation, 86
 Herman Miller (company), 313
 Hexachloroethane (HCE), 249
 HFC, *see* Hydrofluorocarbon (HFC)
 Highly exposed person, 154
 Hillsborough, North Carolina, 23
 Hinduism, 94
 Hippocratic Oath, 46–47
 Holy Cross College, 111
 Honda Motors, 30
 Honesty, 55
 Hopewell, Virginia, 98–100
 Hormone, 271
 Hot spot, 83
 Houston, Texas, 243, 277–278
 Hunter College, 13
 Hurricane Katrina, xi, 111, 135, 156, 180, 182–185, 226
 Hyatt skywalk collapse, 111

Hydraulics, 226
 Hydrocarbon, 30–31, 243, 249
 Hydrochloric acid (HCl), 264
 Hydrochlorofluorocarbon (HCFC), 263
 Hydrofluorocarbon (HFC), 263–264
 Hydrogen ion concentration, 246
 Hydrology, 226
 Hydrolysis, 342
 Hydroxyl radical, 181

Iatrogenic disease, 118
 Idioms, 225
 Ignitability, 166, 275
 Ignorance, 111
 Illinois Power, 309
 Ill-posed problem, ix
 Imagination, 326–327
 Imhoff tank, 78
 Impartiality, 42–43
In utero exposure, 143
In vitro study, 165
In vivo study, 165, 188
 Incidence, 198
 Incineration, 155
 Individual risk, 210
 Inequity, 42
 Inflow, 205
 Informatics, 292
 Informed consent, 156–158
Ingenia, 60
 Ingestion, 260
 Inhalation, 260
 Initiation, 196
 Inorganic contaminant, 190–192
 Intake, 206
 Interaction matrix, 235–236
 Interface Carpet Company, 312–313
 Interim Guidance for Investigating Title VI Administrative Complaints Challenging Permits, 15–17
 Intermediate exposure, 202
 Internal dose, 165
 Inuit, 154–155
 Inversion, thermal, 251–252
 IQ test, 159
 Iron Gates Dam, 135
 Irritant, 275
 Ishikawa diagram, 161

- Islam, 94
 ISO 14000, 311–312
 Isomer, 344
 Israel, 248
- James River, Virginia, 100
 Jersey City, New Jersey, 192–194
 Jesuit, 58
 Jetsons, 44
 Johns Hopkins University, 93, 101
 Joyce Engineering, 24, 26
 Judaism, 94
 Jumbo jet, 67
 Junk science, 338
 Junkyards, 256, 258–259
 Just compensation, 184
 Justice, definition of, 2, 37
- Kansas Department of Health and Environment, 143
 Keeling curve, 268
 Kepone, *see* Chlordcone
 Kinetics, 179
 Knossos, Crete, 274
 Koppers Company, 9
 Kriging, 327, 328
 Kubiak, Timothy, 36
 Kudzu, 279
- L1011, 67
Ladrillero, 251, 253
 Laminar flow, 50
Lancet, 146
 Land mines, 125
 Land use planning, 325
 Landfill, 22–27, 127–129, 226, 273, 275, 303
 Land-use, 9
 Latency period, 145
 Lawrence Berkeley National Laboratory, 203–204
 Lawrence Experiment Station, 213
 Lead (Pb), 4, 10–11, 36, 154, 159–160, 194–195, 257, 261, 271, 285
 LED, *see* Light emitting diode (LED)
 Leeds, England, 288
 Left-brained, 150
 Legal considerations, 103–104, 308–310
 Lethal concentration, 99, 167
 Lethal dose, 167–168
- Leviathan*, 62
 Liability, 308
 Liberty, 2, 116
 Life, 2
 Life-cycle analysis, 299–302
 Life-cycle, 22, 296–297, 298, 299–302
 Lifetime average daily dose (LADD), 206–217
 Light emitting diode (LED), 300
 Light nonaqueous-phase liquid (LNAPL), 277–278
 Limestone, 246–247
 Line drawing, 46–49
 Linearized multistage dose-response curve, 199
 Livable housing, 8
 LNAPL, *see* Light nonaqueous-phase liquid (LNAPL)
 LOAEL, *see* Lowest observed adverse effect level (LOEAL)
 Locally undesirable land use (LULU), 127
 Lock Haven, Pennsylvania, 217
 Lockheed Aircraft, 67
 London, England, 187, 222
 Long-range transport, 155
 Long-term exposure, 202
 Los Angeles, California, 243, 244, 245, 297
 Love Canal, New York, 9, 147, 175
 Low hanging fruit, 296
 Lower Rio Grande Transboundary Air Pollution Project, 254–255
 Lowest observed adverse effect level (LOAEL), 170
 Loyalty, 55
 LULU, *see* Locally undesirable land use (LULU)
 Lung cancer, 255
 Lyme disease, 144
- MacDonnell Corporation, 67
 MacDonnell Douglas Corporation, 67
 Macroethics, 96, 335
 Macroscale, 50
 Mad hatter's disease, 151
 Malaria, 98
 Manifest, hazardous waste, 305
 Maquiladora, 253, 284–285
 Mars, 52
 Martin 404, 112
 Maslow's hierarchy of needs, 289–290
 Mass balance, 205, 305–307
 Massachusetts Institute of Technology, 65, 81, 119, 213, 329

- Massachusetts State Board of Health, 81, 213
 Masters Tournament, 44
 Material changes, 307
 Mauna Loa, Hawaii, 268
 Maximally available control technology (MACT), 212
 Maximum contaminant level (MCL), 84–85
 Maximum daily dose, 206
 Maximum exposed individual, 210
 Max-Plank Institute, 267
 Maxus Energy, 192
MCL, *see* Maximum contaminant level (MCL)
 Meadow Brook, 242
 Mechanism of action, 200
 Medical waste, 275
 Memory extinction, 109–110
 Memory, 109–110, 259
 Memphis, Tennessee, 80
Men of Science, 152
 Meramac River, 175
 Mercury (Hg), 136, 147, 152, 155, 188, 202–203, 258, 271, 282, 285
 Mesoscale, 50
 Mesothelioma, 86–88
 Metabolism, 342
 Metabolomics, 274, 292
 Metabonomics, 274, 292
 Metal, 84
 Metalloid, 192
 Methane (CH_4), 249, 264, 269, 270, 302
 Methyl chloride, 304–307
 Methyl parathion, 171–173
 Mexico City, Mexico, 252
 MF, *see* Modifying factor (MF)
Miasma theory, 80
 Michalis-Menton kinetics, 92, 108
 Microethics, 96, 335
 Middle Ages, 119
 Military engineering, 60, 113, 120
 Minoan civilization, 274
 Miscalculations, 111
 Mistakes, 111
 Model, 200
 Modifying factor (MF), 170
 Molar concentration, 177
 Molecular weight, 340
 Monetization, 28
Montreal Protocol on Substances that Deplete the Ozone Layer, 266
 Moral development, 314–316
 Mortality, 152
 Morton-Thiokol, 100
 Mossville, Louisiana, 182
 Multistage model, 200
 Mutagen, 180
 Mutation, 165
 Mutually assured destruction, 123
 Nano-scale, 241, 293–294, 295
 Nano-technology, 293–295, 300, 321, 337
NASA, *see* National Aeronautics and Space Administration (NASA)
 Nasal exposure, 259–260
 National Academy of Engineering, vii, xi, 31, 93, 335
 National Aeronautics and Space Administration (NASA), 26
 National Association of Diaper Services, 300
 National Environmental Policy Act (NEPA), x, 31, 229, 232–233, 238–240, 284
 National Flood Insurance Program, 185
 National Pollutant Discharge Elimination System (NPDES), 99–100
 National Research Council, 85, 152–153
 National Science Foundation, 117
 National Ski Areas Association, 311
 National Society of Professional Engineers (NSPE), vii
 Natural attenuation, 156
 “Natural Capitalism,” 313
 Natural forces, 111
 Natural gas, 249
 Navier–Stokes equation, ix
 Nazi Germany, 156
 Negative paradigm, 47–49
NEPA, *see* National Environmental Policy Act (NEPA)
 Neurotechnology, 337
 Neurotoxin, 3, 4, 147, 194–195, 271, 298
 New Orleans, Louisiana, 180, 182
 New Source Review (NSR), 309
 New York University, 92
 New York, New York, 297
 New Zealand, 265
 Nicea, 120
NIMBY, *see* Not in My Backyard (NIMBY)
 Nitric oxide (NO), 259–260
 Nitrogen (N), 83
 Nitrous oxide, 269, 270–271

- No observed adverse effect level (NOAEL), 170, 199
NOAEL, *see* No observed adverse effect level (NOAEL)
 Nobel Peace Prize, 56, 124
 Nobel Prize for Chemistry, 267
 Nobel Prize for Physiology or Medicine, 97
Noblesse oblige, 57
 Noncancer effects, 168–169
 Nonlinearity, ix, 201
 Nonuniformity, 43
 Normandy invasion, 66
 North Carolina Central University, 6
 North Carolina General Assembly, 34
 Northeastern Pharmaceutical and Chemical Company, 175
 Northwestern University, 268
 Norwegian Institute for Water Research, 248
 Norwich University, 61
 Not in My Backyard (NIMBY), 8, 26
 NPDES, *see* National Pollutant Discharge Elimination System (NPDES)
 NSPE, *see* National Society of Professional Engineers (NSPE)
 NSR, *See* New Source Review
 Nuclear power, 231, 284
 Nuclear Regulatory Commission, 284
 Nuisance, 133, 259–260
 Nutrient cycle, 279–280, 324
- Oakridge National Laboratory, 208
 OBPA, *see* 10', 10'-oxybis(phenoxyarsine)
 Octane, 36
 Octanol, 178
 Octanol–water coefficient (K_{ow}), 178, 341
 Odor, 238–239, 258
 Office of Management and Budget, 144
 Ohio Edison, 309
 Ohio Wesleyan, 267
 Olfactory center, 258–259
 One-hit model, 199
 Open burning, 256, 260
 Operational changes, 307
 Opportunity risk, 321
 Optimization, 116
 Oral tradition, 25, 324
 Orange County, North Carolina, 22–26
 Organic acid, 191
 Organic carbon partitioning coefficient (K_{oc}), 179–180, 186, 342
 Organic contaminant, 189–190
 Organochlorine pesticide, 97–100
 Organophosphate pesticides, 271
 Outflow, 205
 Outrage management, 149
 Oxfam, 57
 Oxidation, 249, 344
 Oxides of nitrogen, 246–247, 258, 259
 Oxides of sulfur, 244, 245, 247–248
 Oxidizer, 188
 Oxygen (galvanic) probe, 223
 Oxygen, discovery of, 288
 Ozone hole, 264, 265
 Ozone, stratospheric, 51, 245, 262–266
 Ozone, tropospheric, 51, 242–244, 245
- PAH, *see* Polycyclic aromatic hydrocarbon (PAH)
Palintonon, 120
 Pan-American Health Organization, 125
 Paper, 301–302
 Paradigm shift, 255
 Paradigm, 108, 230, 260
 Partial pressure, 177
 Particulate matter (PM), 143, 238–239, 258, 260, 261, 285, 297, 301
 Partitioning, 177
 Pb, *see* Lead (Pb)
 PBT, *see* Persistent bioaccumulating toxic (PBT)
 PCB, *see* Polychlorinated biphenyl (PCB)
 Peace Corps, 125
 Peace engineering, 122, 124–125
 Pennsylvania Coal Company, 242
 Pentane, 301
 Perfect storm, 135, 182
 Periodic table of elements, 83
 Peroxyacetyl nitrates (PANs), 243
 Persistence, environmental, 174–182, 273
 Persistent bioaccumulating toxic (PBT), 186, 273, 342
 Persistent organic pollutant (POP), 155, 273
 Personality, 54
 PH, 79, 82–83, 244–248
 Philadelphia, Pennsylvania, 297
 Phosphorus (P), 83
 Photochemical oxidant smog, 242–244, 245
 Photochemistry, 243–244, 263–266, 289, 342
 Photolysis, 342
 Photosynthesis, 287, 289
 Phthalate, 257, 272

Physicians for Social Responsibility, 253
 Pica, 236
 Pittsburgh, Pennsylvania, 81
 Plank's constant, 243, 263
 Plasticizer, 257
 Plastics, 249, 259, 297
 Plausibility, 221
 Pledge of Allegiance, 1
 Plug door, 68
 PM, *see* Particulate matter (PM)
 Point of departure, 165
 Poisson distribution, 137–138
 Polarity, 178
 Polaroid, 310
 Police power, 248
 Polish-Russian War, 63
 Pollution Prevention Act, 304
 Pollution prevention, 302–308
 Pollution, 133
 Polychlorinated biphenyl (PCB), 4–6, 13, 32–34, 147, 148, 154–155, 188, 191, 256, 258, 271, 272, 273, 341, 344, 345
 Polycyclic aromatic hydrocarbon (PAH), 143, 171, 188, 257, 272, 345
 Polyethylene, 249–250, 256
 Polymer production, 180
 Polystyrene, 301
 Polyvinyl chloride (PVC), 249, 256–257, 298
 Pontoon bridge, 120
 POP, *see* Persistent organic pollutant (POP)
 Population risk, 210
 Positive paradigm, 47–49
 Potential dose, 204
 Potential responsible party (PRP), 193
 Precautionary principle, 199–200, 219, 320
 Prevalence, 198
 Price gradient, 128
 PriceWaterhouse Coopers, 312
 Principle of Expediency, 213
Pro bono, 338, 339
 Probability density function (PDF), 137
 Probability, 134–139, 156, 160, 209
 Process modifications, 308
 Proctor & Gamble, 300
 Productivity, ecological, 280
 Professional Engineer (PE) examination, 131
 Profit, 310
 Progressive tax, 45
 Promotion, 196
 Property values, 129

Protein kinase C (PKC), 159
 Proteomics, 274, 292
 Pruitt-Igoe, 74–77, 127, 335
 Public good, 38
 Public welfare hazard, 188
 Public, the, 95, 125, 184, 332–334
 Pursuit of happiness, 2
 PVC, *see* Polyvinyl chloride (PVC)
 Pyrolysis, 249
 Quality of life, 75
 Quantified checklist, 233
 Quantitative structural activity relationship (QSAR), 318
 Quartering winds, 330
 Queens Head Tavern, 61
 Racism, 28–29
 Radiative forcing, 269–270, 346
 Radioisotope, 194
 Radium (Ra), 152
 Raleigh-Durham, North Carolina, 243
 Rare events, 198–200
 Reactivity, 166, 275
 Reasonable person standard, 42
 Receptor, cellular, 271, 274
 Recruitment (community), 254
 Recycling, 10, 255–256, 292, 300, 326
 Red herring, 149
 Reduction-oxidation (redox), 343
 Reference concentration (RfC), 170, 307
 Reference dose (RfD), 170, 196, 211, 219, 307
 Refrigerant, 264, 267
 Relative risk, 306
 Reliability curve, 161–162
 Reliability, definition of, 160–164
 Reliability, ecosystem, 337
 Remediation, 156
 Removal (hazardous waste), 156
 Rensselaer Polytechnic Institute, 61
 Research Triangle, North Carolina, 336
 Resource Conservation and Recovery Act, 275, 286
 Reverence for Life, 55, 56
 Reynolds number, 50
 RfC, *see* Reference concentration (RfC)
 RfD, *see* Reference dose (RfD)
 Rhine River, 248
 Right-brained, 150
 Rio de Janeiro, Brazil, 287

- Rio Grande Valley, 253–255
 Riparian water rights, 242
 Risk, 3, 133, 134
 Risk analysis, definition of, 134
 Risk assessment, definition of, 134
 Risk characterization, 223
 Risk, definition of, 151–154, 164
 Risk management, definition of, 134
 Risk perception, 141–143, 147–148, 150–152
 Risk reduction, 2, 133
 Risk shifting, 97–100, 186
 Risk tradeoff, 149–150, 248
 Rocket, liquid fuel, 123
 Rocky Mountain spotted fever, 144
 Roman Empire, 38, 60, 119, 274–275, 285
 Rotary Club, 44
 Route of exposure, 134–135, 140–142
 Royal Army Medical Corps, 222
 Royal College of Physicians, 187
 Royal College of Surgeons, 187
 Rubbish, 238–239
 Rule of six nines, 200
- Safe Drinking Water Act, 85
 Safety, vii, 2, 57, 65, 101, 134, 140, 216, 237, 326
 Sample preparation, 205
 San Francisco, California, 145
 San José de Bocay, Nicaragua, 126
 Sandinistas, 126
 Sanitary engineering, 275
 Saturday Night Live, 55
 Saturn rocket, 123
 Sauget, Illinois, 21
 Scandinavia, 246, 248
 Scholastic Achievement Test, 148
 Scranton, Pennsylvania, 242
 Scripps Institute, 268
 Seabees, U.S. Navy, 121
 Secchi disk, 52
 Secondary pollutant formation, 243
 Select Steel Corporation, 18–19
 Self-awareness, 316
 Semivolatile organic compounds (SVOCs), 259, 260
 SES, See socioeconomic status
 Seveso, Italy, 176
 Shannon–Weiner index, 280–282, 337
 Shell Oil, 190
 Shintech, 17–18
 Short-term contact, 202
- SIDS, *see* Sudden infant death syndrome (SIDS)
 Sierra Club, 86
 Sigma Xi, vii
 Sigmoidal curve, 196
 Signal-to-noise ratio, 89
 Significance, 40, 58–59
Silent Spring, x, 97, 101, 271
 Sink, 205
 Situational morality, 91
 Skin cancer, 265
 Slope factor (cancer), 167, 196–198
 Sludge, 78
 Smelting, 255
 Social contract, 21, 62–63, 262
 Social science, 77
 Society of Cincinnati, 63
 Socioeconomic status (SES), 3
 Solubility, 275–277, 341
 Solvents, 293
 Sorption, 257, 340, 342
 Source, 205
 South Africa, 327
South Camden Citizens v. New Jersey Department of Environmental Protection, 14
 South Pole, 264, 265
 Southern Christian Leadership Conference, 13
 Southern Company, 309
 Southern culture, 324
 Southern Indiana Gas & Electric Company, 309
 Soviet Union, 123, 124
 Spaceship Earth, 256
 Speciation, 205
 Specificity, 220
 Spin, 51, 89
 Sport utility vehicle (SUV), 327
 Spot map, 187
 St. James Parish, Louisiana, 17–18
 St. Louis, Missouri, 75, 127, 175, 335
 St. Nicholas Church, 56
 St. Petersburg, Russia, 64
Stalking the Wild Taboo, 291
 Standard Fruit Company, 190
 Stanford Research Institute, 245
 Stanford University, 108, 230, 291
 State of nature, 62, 262
 State University of New York, Stony Brook, 147
 Statutes, 103–104
 Steel mini-mill, 18
 Steel production, 258
 Stereochemistry, 340

- Steric hindrance, 186
 Stoichiometry, 249
Storm King v. Federal Power Commission, 16
 Strategic Defense Initiative, 117
 Stratosphere, 262
 Strength of association, 220
 Stressor, ecological, 279
 Structure, ecosystem, 279, 324
 Subpopulation, 3
 Substituent, 35
 Substitution, chemical, 342
 Sudden infant death syndrome (SIDS), 297–299, 319
 Sulfide, 258, 301
 Sulfuric acid, 146, 244
 Superfund, 175
 Susceptibility, 188, 251, 253, 271, 299
 Sustainability, 287–292, 336–338
 Sustainability, ecological, 280
 Sustainable development, 287–290
 SUV, *see* Sport utility vehicle (SUV)
 Synergism, 171, 327
 Synfuels, 309–310
 Syntex Agribusiness, 175
 Syphilis, 156–157
 Systematic error, 83
- Tacoma Narrows bridge, 145
 Talmud, 318
 Tampa Electric Company, 309
 Tax collectors, 38, 58
 Taxonomy, 279
 Teleology, 62
 Temporality, 220–221
 Teratogen, 180
 Terrorism, 110, 112, 113–117, 139, 152, 295, 311, 317
 Test reliability, 163
 Tetrachlorodibenzo-*para*-dioxin (TCDD), 175–176, 200–201, 272
 Tetrachloroethene (TCE), 249
 Tetrachloromethane (CCl₄), 136, 215–217, 304–307
 Tetraethyllead, 159
 Texas Natural Resource Conservation Commission, 253
 Texas Voluntary Cleanup Program, 278
The Ghost of the Executed Engineer, 64
The King's Tithe, 62
 The Natural Step, 320
The Quest for the Historical Jesus, 56
- The Structure of Scientific Revolutions*, 230
 Theology, 57
Théorie analytique des probabilités, 135
Theory of Justice, 38–39
 Theory, ix
 Thermodynamics, vii, 103
 Thorium (Th), 194
 Times Beach, Missouri, 147, 174–176
 Tin (Sn), 272, 273
 Tire-burning, 251–253
 Title VI discrimination, 19
 Tobacco smoke, environmental, 297
 Toluene, 258
 Tower of London, 120
 Toxic Release Inventory (TRI), 181
 Toxic Substances Control Act (TSCA), 5, 148
Toxic Wastes and Race in the United States, 11, 13, 21, 32
 Toxicity, 165–173, 275
 Toxicology, 199, 318
 Trabi, 302–303
Tragedy of the Commons, 260–261, 290, 336
Trebuchet, 120
 Trends in International Mathematics and Science Study, 106–107
 TRI, *see* Deoxyribonucleic acid (DNA)
 Trichloroethylene, 304–307
 Troposphere, 262
 Trust, 132, 332–334
 Truth, 55, 66, 83–86
 TSCA, *see* Toxic Substances Control Act (TSCA)
 Tube well, 90
 Tulane Environmental Law Clinic, 17
 Turbulent flow, 50
 Turkish Airlines, 71
 Tuskegee, Mississippi, 156–157
 Two-hit theory (of cancer), 195–196
 Typhoid fever, 152
- U.S. Bureau of Labor, 104
 U.S. Department of Agriculture, 98
 U.S. Environmental Protection Agency (EPA), 5, 10, 11, 13, 16, 17, 18, 34, 85–86, 96, 143, 174, 200, 208, 213, 214, 218, 232, 251, 253, 291–292, 300, 303–304, 309, 310, 311
 UF, *see* Uncertainty factor (UF)
 Ultraviolet (UV) radiation, 202, 263–266
 Unborn, 316
 Uncertainty factor (UF), 170

- Uncertainty, 49–50, 85, 219
 United Church of Christ Commission on Racial Justice, 11, 21
 United Nations Children’s Fund (UNICEF), 90
 United Nations Conference on Environment and Development, 287
 United Nations Environmental Program (UNEP), 224
 Universal gas constant, 178
 University of California at Irvine, 267
 University of Chicago, 267
 University of Illinois, 268
 University of Indiana, 36
 University of Kansas, 108
 University of Karachi, 139
 University of Michigan, 151
 University of North Carolina, 21, 223
 University of Pennsylvania, 325
 University of Pittsburgh, 159
 University of Southern California, 16
 University of Strasbourg, 56
 University of Washington, 126
 Uranium (U), 139
 Usury, 58
 Utilitarian ethics, 28, 45
 Utility, 260–261, 290
- V-2 rocket, 123
 Valley of the Drums, Kentucky, 175
 Value, 144–145, 322–323
 Vanguard rocket, 123
 Vapor pressure, 177, 319, 341
 Variogram, 327
 Vassar College, 65
 Vatican, 52
 Veil of ignorance, 38–39, 338
 Verona, Missouri, 175
 Vestal virgins, 229
 Vietnam War, 29
 Vikings, 318
 Vinclozolin, 12, 273
 Vinyl chloride, 180–182, 208, 210–211, 257
 Virtue, 51
- Voice, 322
 Volatile organic compounds (VOCs), 259, 260, 304–307, 341
 Volatility, 177, 341
 Voting Rights Act, x
- War engineering, 118–121
 Ward Transfer Company, 5
 Warming, global, 266–271
 Warren County, North Carolina, 3, 4–6, 32–34
 Washington Park, Illinois, 257
 Waste audit, 304–307
 Waste generator, 275–276
 Wastewater treatment plant, 273
 Watch dials, 151
 Watergate, 214
 Wayne State University, 108
 Weight of evidence, 218, 223
 Welfare, vii, 57, 65, 101
 West Dallas, Texas, 10
 West Point, New York, 60–61, 63, 121
 Wetland, 183
 Whistle-blowing, 72–73
 Wild and scenic rivers, 212
 Wilmington, North Carolina, 13
 Wire insulation, 256
 Wood, 249
 Woods Hole Marine Biological Laboratory, 101
 World Bank, 125
 World Commission on Environment and Development, 287
 World Health Organization, 118
 World Summit on Sustainable Development, 287
 World Trade Center, New York, 36, 77, 89, 113–115, 259–262
- Xenophobia, 230
 Xylene, 203–204, 258
- Yorktown, 63
- Zinc, 257