INDEX

Environmental Tobacco Smoke is abbreviated as ETS throughout this index.

ABSORPTION
biological markers for ETS, 200–206
biological markers of smoke absorption in smokers and nonsmokers, 181
ETS vs. active smoking, comparison, 215–216
nicotine, tobacco smoke exposure determination, 203–205

ACROLEIN
measurement under realistic conditions (table), 148

ADOLESCENTS
regulations in schools to prevent smoking initiation, 282

AEROSOLS
mainstream smoke, particle size measurement during laboratory smoking, 182–183, 186
monodisperse vs. polydisperse, effect on respiratory tract deposition, 181–182
regional deposition in respiratory tract, smoke particle size as factor, 189, 191–192
sidestream smoke, mass median diameter effect on deposition in respiratory tract, 187

AGE FACTORS
respiratory effects of involuntary smoking in infants and children, 42–44

AIR POLLUTION
(See also ENVIRONMENTAL TOBACCO SMOKE)
hospital smoking policies, assessment of effect, 311

ALDEHYDES
irritant in ETS, 229

AMMONIA
irritant in ETS, 229

AROMATIC AMINES
sidestream smoke levels higher than in mainstream smoke, 14

AROMATIC HYDROCARBONS
measurement under realistic conditions (table), 149–150

ASThma
(See also RESPIRATORY TRACT DISEASES)
children, maternal smoking as risk factor, 55–58
pulmonary function in adult asthmatics exposed to cigarette smoke, 63, 65

ATTITUDES
public attitudes and social norms, cigarette consumption relationship, 321
public knowledge and attitudes about smoking, assessment by surveys, 307
public toward smoking, conclusions of 1986 report, 324
review of impact of smoking restrictions, 319–320
smokers on cessation or reduction, restrictions and social norms as factors, 305

BEHAVIOR, HUMAN
(See also SMOKING CHARACTERISTICS; SMOKING HABIT)
anticipated changes by smokers to workplace regulations, 312
assessment of impact of smoking policies on smokers, 307
INDEX

BEHAVIOR, HUMAN—Contd.
bans on smoking, effect on behavior of smokers, 16
direct and indirect effects of smoking policies, 304
hospital employees, smoking behavior before and after policy implementation, 315
hospital patients and employees, current evidence of smoking policies, 308-309
nonsmoking as normative behavior, reinforcement with smoking policies, 304
reduction or cessation of smoking, indirect effect of smoking policies, 304-305
research recommendations, effect of smoking restrictions, 322
review of impact of smoking restrictions, 320-321
smoking policy impact, evaluation, 306

BIOASSAY
chemical assays for human exposure to cigarette tar components, 206, 217
cotinine levels as measure of nicotine absorption, 205-206
nicotine in blood for exposure determination, feasibility, 205

BIRTH WEIGHT
maternal smoking as risk factor, 6

BLOOD
cotinine level as marker for ETS exposure in nonsmokers, 376
cotinine levels as measure of nicotine absorption in nonsmokers, 205-206
cotinine levels in ETS-exposed nonsmokers vs. active smokers (table), 211-214
nicotine and cotinine levels to quantify ETS exposure, 208
nicotine levels in ETS-exposed nonsmokers vs. active smokers (table), 208-210
nicotine levels in nonsmokers vs. smokers, 216
white blood cell counts in smokers vs. nonsmokers, 244

BRAIN CANCER
(See also CANCER)
ETS exposure as risk factor, 102, 104

BREAST CANCER
(See also CANCER)
spousal smoking as risk factor, 102

BRONCHITIS
(See also RESPIRATORY TRACT DISEASES)
children, involuntary smoking relationship, longitudinal studies, 38, 42
children of smokers, conclusions about risk, 106
infants and children, parental smoking as risk factor, 10

CANCER
(See also BRAIN CANCER; BREAST CANCER; CERVICAL CANCER; LUNG CANCER; RESPIRATORY TRACT CANCER)
carcinogenesis, initiators and promoters in tobacco smoke, 28
carcinogens in ETS as risk factors, 135
children, parental smoking as risk factor for cancers other than lung cancer, 102-105
ETS exposure risk, 102-104
involuntary smoking relationship requires further investigation, 14
smoking as major risk factor, 6

CARBON MONOXIDE
acute toxicity in animals as factor in smoke carcinogenicity testing, 247
biological marker for ETS absorption, 201-202
ETS exposure measurement, lack of specificity as limitation, 202
involuntary smoking exposure may be more constant than active smoking, 202
lung deposition kinetics as factor in temporal variation in concentration, 201-202
measurement under realistic conditions (table), 151-154
sidestream smoke vs. mainstream smoke, 129
INDEX

CARBON MONOXIDE—Contd.
workplace level, contribution of tobacco smoke, 232

CARBOXYHEMOGLOBIN LEVELS
biological marker for carbon monoxide exposure, 202

CARCINOGENESIS
initiators and promoters of cancer in tobacco smoke, 28
tumor induction in animal tissues with cigarette smoke condensate, 249-250

CARCINOGENS
environmental vs. mainstream smoke, 134-135, 137
ETS vs. mainstream smoke in indoor environments (table), 136
human and animal definition, 135, 137
mainstream and sidestream smoke, 23-24
sidestream and ETS, 251-252

CARDIOVASCULAR DISEASES
ETS exposure as factor not established, 10-11
involuntary smoking as risk factor, conclusions, 107-108
involuntary smoking relationship requires further investigation, 14
nonsmokers, prospective and case-control studies, 105-106

CASE-CONTROL STUDIES
(See also EPIDEMIOLOGICAL STUDIES)
cardiovascular disease risk, 105-106
lung cancer risk, 97-98
lung cancer risk in exposed nonsmokers, Hong Kong study, 80-81
lung cancer risk in spouses of smokers, Louisiana study, 79-80
lung cancer risk in wives of smokers, Greek study, 78-79
lung cancer risk relationship, Four Hospitals study, 84-85
lung cancer risk relationship, German study, 90
lung cancer risk relationship, Japanese study, 88-89
lung cancer risk relationship, Swedish study, 89-90

CASE-CONTROL STUDIES
lung cancer risk relationship, United Kingdom study, 86-88
respiratory disease risk in children, 43-44

CELLS
inflammatory cell number and function in smokers, inferences for involuntary smokers, 244-245
inflammatory, experimental models of cigarette smoke inhalation, 245-246
inflammatory, need to determine effect of ETS exposure, 252

CELLS, EPITHELIAL
chronic ETS exposure, inferred risk in nonsmokers, 240-241
ETS exposure effect, research needed, 252
hyperplasia, loss of cilia, nuclear atypia, smoking habit relationship, 259-250

CERVICAL CANCER
(See also CANCER)
spousal smoking as risk factor, 102

CESSATION OF SMOKING
public attitudes and smoking policies as indirect influences, 304-306
research recommendations on effect of smoking restrictions, 322
workplace programs as part of smoking control, 297
workplace programs, survey data, 294
workplace smokers motivation and success, smoking policies as factor, 313-315

CESSATION OF SMOKING, METHODS
workplace program, smoking policy implementation effect on participation, 314-315

CHEMICAL ANALYSIS
sidestream vs. mainstream smoke, 127

CHILDREN
asthma, maternal smoking as risk factor, 55-58
brain tumors, maternal smoking as factor, 104
CHILDREN—Contd.
bronchitis, involuntary smoking relationship, longitudinal studies, 36, 42

cancer risk other than lung cancer, parental smoking as risk factor, 102-105
cough, phlegm, and wheezing, parental smoking as risk factor, 44, 47-49
ETS exposure, determinants, 12
ETS exposure, reported irritation, 239
health risks of ETS exposure, conclusions, 107
health risks of involuntary smoking, summary and conclusions of 1996 report, 12-10
leukemia, maternal smoking during pregnancy as factor, 103
lung cancer risk, parental smoking as factor, 90-91
lung function, information needed on relationship with ETS exposure, 32
lung function, involuntary smoking risk relationship (table), 50-52
lung function, maternal smoking relationship, 49, 53-54
lung function, parental smoking as factor, 13, 107
middle ear effusions and diseases, parental smoking risk relationship, 58-59
respiratory diseases, involuntary smoking relationship (table), 39-41
respiratory diseases, parental smoking as risk factor, 10, 13, 43 44
respiratory function tests, maternal smoking as factor, 53
respiratory symptoms in children of smokers, 13
respiratory symptoms, relationship with involuntary smoke exposure (table), 45 46
respiratory system effects of involuntary smoking, 37-59
saliva cotinine concentrations, influence of parental smoking, 201-208

CIGARETTE EQUIVALENTS

calculation of individual constituents needed to determine disease risk, 199-200
involuntary smoking toxicity estimation, mathematical modeling, 198-200

CIGARETTE SMOKE
(See also ENVIRONMENTAL TOBACCO SMOKE, MAINSTREAM SMOKE; SIDESTREAM SMOKE; SMOKE STREAMS; TOBACCO SMOKE)
aerosol, suspension of particles in a gaseous or vapor medium, 181
animal models of carcinogenicity, 247-249
carcinogenicity, condensate bioassay as alternative to smoke exposure, 249-250
carcinogenicity demonstrated in animal models, 252
carcinogenicity testing in animals, nicotine and carbon monoxide toxicity as factor, 247
ETS in public places, major source, 128
inflammatory cell function, experimental models of inhalation effect, 245-246
particulate mass deposited in respiratory tract, 193, 198
particulate phase constituents, sidestream to mainstream ratio (table), 130-131
regional deposition in respiratory tract, particle size as factor, 189, 191-192
total suspended particulates generated under laboratory conditions (table), 197
toxic and carcinogenic agents in indoor environments (table), 136
unfiltered cigarette, comparison of mainstream and sidestream smoke (table), 128
vapor phase constituents, sidestream to mainstream ratio (table), 130-131

CIGARETTES
nonfiltered, vapor and particulate phase smoke components (table), 130-131
INDEX

COMBUSTION TEMPERATURE
mainstream and sidestream smoke, effect on composition, 24
sidestream vs. mainstream smoke generation, effect on component levels, 128-129

COTININE
biological marker for ETS absorption, 35-36, 200
blood levels in nicotine-injected vs. smoke-exposed nonsmokers, 215-216
body fluid level as marker for smoke exposure in nonsmokers, 8
body fluid levels in nonsmokers as measure of nicotine absorption, 205
body fluid levels in nonsmokers to establish lung cancer risk, 95
body fluid levels increase with reported ETS exposure, 15, 217
ETS exposure marker of choice in epidemiological studies, 217
ETS exposure marker under real-life conditions, 207
ETS exposure quantification, 208, 215
nicotine absorption estimation, 205-206
plasma, urine, saliva concentrations, correlation, 205
plasma, urine, saliva levels in ETS-exposed nonsmokers vs. active smokers, 211-214
urinary levels in ETS-exposed vs. nonexposed men, 207

COUGH
(See also RESPIRATORY SYMPTOMS)
children of parents who smoke, relationship, 44, 47-49

EARS
middle ear effusions in children of smokers, 58-59, 107

EMPHYSEMA
(See also RESPIRATORY TRACT DISEASES)
nonsmokers vs. smokers, 246

ENVIRONMENTAL TOBACCO SMOKE
(See also CIGARETTE SMOKE; IN-VOLUNTARY SMOKING; MAINSTREAM SMOKE; SIDESTREAM SMOKE; TOBACCO SMOKE)
absorption of constituents by nonsmokers under experimental and natural exposure, 206-207
active smoking dose-response relationships provide insight into risks, 26-28
acute exposure, irritation effects, 229-229
acute physiological response, experimental studies, 233-239
air dilution effect on particle size and distribution, 134
airways hyperresponsiveness and other factors in response, 28
annoying and irritating effects of exposure, field and experimental studies, 231-239
assessment techniques needed of recent and remote exposure, 14
atmospheric markers of exposure, 33
atmospheric vs. biological markers of absorption, 201
bioassays needed to determine genotoxicity, 252
biochemical markers of exposure during experimental and natural conditions, 206-207
biological markers for absorption, 200-206
biological markers for estimating exposure, 141
brain cancer risk relationship, 102, 104
cancers other than lung cancer, risk relationship, 102-104
carbon monoxide as biological marker of exposure, 201-202
carcinogen levels vs. mainstream smoke, 134-135, 137
carcinogenicity, 10
carcinogenicity, in vivo and in vitro experimental determination, 247-251
INDEX

ENVIRONMENTAL TOBACCO SMOKE—Contd.
cardiovascular disease risk, prospective and case-control studies, 105–106
chemical analysis shows spectrum of carcinogens, 251–252
chemical composition, comparison with mainstream smoke, 135, 137
chemical composition, complexity as factor in exposure determination, 147
chronic exposure, inferred risk for respiratory epithelial changes, 240–241
cigarettes as major source in public places, 128
concentration determination, ventilation and other factors, 146–147, 164–165
concentration measurement, 193
concentrations in public transportation as factor in smoking restrictions, 278
constituents from mainstream and sidestream smoke, 7–8
contribution to indoor air pollution, conclusions, 169
cotinine as biological marker of absorption, 35–36
cotinine as exposure marker of choice in epidemiological studies, 217
cumulative, duration, and intensity of exposure influences effects, 33
determinants of exposure, 11–12
disease risk estimation, value of biological markers of absorption, 200–201
dose, product of mass in inhaled air and deposition fraction, 189
exposure estimation, mathematical model using "cigarette equivalents", 198–200
exposure expressed as cigarettes/day, variations in estimates, 25–26
exposure, extrapolation of active smoking data, 23–28
eye irritation in exposed children, 239
eye, nose, throat, respiratory system irritation, conclusions, 252

ENVIRONMENTAL TOBACCO SMOKE—Contd.
genotoxic potential, use of short-term in vitro assays, 250–251
health effects, 21–106
health effects, methodological problems in assessment, 21–22
health effects of exposure, summary, 13–14
health risk determination, assessment of exposure critical, 32
health risks of exposure, conclusions, 7, 107–108
human exposure, factors in estimation, 139, 141–142
"individual solution" approach to workplace smoking implies no hazard, 298
inflammatory cell functions in smokers, inferences for exposed nonsmokers, 244–245
irritant components, whole sidestream smoke vs. gas phase only, 236–238
irritant effect on allergic persons, 239
irritant effects of exposure in nonsmokers in restaurants and offices, 232
laboratory, toxicological, human exposure, and epidemiological investigations of hazards, 22–23
lung cancer risk, epidemiological and case-control evidence, 97–98
lung cancer risk in exposed nonsmokers, Hong Kong case-control study, 80–81
lung cancer risk in spouses of smokers, Louisiana case-control study, 79–80
lung cancer risk in spouses of smokers, Scottish study, 77–78
lung cancer risk in wives of smokers, Greek case-control study, 78–79
lung cancer risk, need for more accurate estimates of exposure, 102
lung cancer risk relationship, Four Hospitals case-control study, 84–86
lung cancer risk relationship, German case-control study, 90
lung cancer risk relationship in nonsmokers, 8–10
INDEX

ENVIRONMENTAL TOBACCO SMOKE—Contd.

lung cancer risk relationship, Japanese case-control study, 88-89
lung cancer risk relationship, Los Angeles County study, 83
lung cancer risk relationship, preliminary findings of U.S. study, 82
lung cancer risk relationship, summary and conclusions, 96-102
lung cancer risk relationship, Swedish case-control study, 89-90
lung cancer risk relationship, United Kingdom case-control study, 86-88
lung disease risk in nonsmokers as extrapolation of risk in smokers, 30-31
lung effects, inferences from available data, 246-247
lung function effects in nonsmokers, 60, 62
lung function in children, more information needed on relationship, 32
major irritants, concentrations in mainstream and sidestream smoke (table), 230
mass deposition in respiratory tract estimation, 193, 198
mathematical models of lung cancer risk in nonsmokers, 93-96
measureable exposure in general population of developed countries, 216
misclassification of smoking status and exposure as factor in determining risk, 66-67, 72-73
monitoring methods to estimate exposure, 164-167
nasal vs. mouth inhalation, effect on particle deposition, 189
nicotine and cotinine in body fluids increase with increasing exposure, 15
nicotine and cotinine to quantify exposure, 208, 215
nicotine as biological marker of exposure, 302-205
nicotine as tracer, need for proper validation in personal monitoring, 168

ENVIRONMENTAL TOBACCO SMOKE—Contd.
nicotine levels in nonsmokers may underestimate exposure to other components, 216
organic gases and aromatic compounds as indicators of exposure, nonspecificity, 168-169
particle size as factor in dispersion, 169
particle size distribution and breathing pattern effect on dose, 25
particle size facilitates rapid distribution, 14
particles, number and size distribution, 137, 139
particulates, aldehydes, phenol, ammonia, and other irritants, 229
personal monitors to measure concentrations preferable to area monitoring, 166
physiochemical nature, distribution, and estimation of human exposure, 125-169
plasma and urine nicotine levels in nonsmokers vs. intravenous nicotine injection, 215
plasma, urine, saliva cotinine in exposed nonsmokers vs. active smokers (table), 211-214
plasma, urine, saliva nicotine in exposed nonsmokers vs. active smokers (table), 209-210
proximity to smoke source as exposure factor, 141
questionnaires for estimating exposure, uses and limitations, 34-35
radioactivity, 134
reduction of exposure as primary goal of smoking regulation in public places, 304
respirable suspended particulates in exposed vs. nonexposed nonsmokers, 169
respiratory disease risk relationship in infants, children, adults, 10
respiratory infections in infants, risk relationship, 31
respiratory symptoms in nonsmokers, possible relationship, 31
school smoking regulations traditionally not to reduce exposure, 282

341
INDEX

ENVIRONMENTAL TOBACCO SMOKE—Contd.
sidestream smoke as major contrib-
utor, 166
statistical significance testing of health risks, 36-37
summary and conclusions of 1986 report, 12-13
temporal and spatial distribution of smokers in exposure determination, 145-146
thiocyanates as biological marker of exposure, 202-203
time–activity patterns as determinant of exposure, 142-145
time period most important determinant of personal exposure, 167
total suspended particulates in indoor working and living areas (table), 194-196
toxic and carcinogenic agents indoors from nonfilter cigarettes (table), 196
urinary cotinine levels in exposed vs. nonexposed men, 207
vapor phase, retention by involuntary smokers, 126-127
workplace exposure, evidence of health hazards as factor in smoking regulations, 286
workplace, lung cancer risk in nonsmokers, 91-92

ENZYME ACTIVITY
lungs of smokers, alveolar macrophages influence on protease-antiprotease balance, 242-243
polymorphonuclear elastase in lungs of smokers, 243
respiratory system of smoke-exposed animals, 245-246

ENZYMES
cysteine, 243

EPIDEMIOLOGICAL STUDIES—Contd.
questionnaires for estimating ETS exposure, uses and limitations, 34-35
ETS See ENVIRONMENTAL TOBACCO SMOKE
EX-SMOKERS
(See also NONSMOKERS)
misclassification of status and ETS exposure as factors in determining risks, 66-67, 72-73

EYES
annoying and irritating effects of ETS exposure, 231-239
irritation from ETS exposure, 11
irritation in ETS-exposed children, 231
nonsmokers, irritant effect of involuntary smoking in restaurants and offices, 232
nonsmokers, sidestream smoke as irritant in laboratory, ventilation as factor, 234-235
smoke concentration vs. exposure duration as factors in irritation, 235
tear film in ETS-exposed nonsmokers, experimental study, 234

FETUS
maternal smoking, effect of exposure to tobacco smoke constituents, 31-32

GAS PHASE, CIGARETTE SMOKE
activity in in vitro assays, 251
irritation in nonsmokers vs. whole sidestream smoke, 236-238

HOSPITALS
(See also PUBLIC PLACES)
air quality, effect of smoking policies, 311
cessation of smoking programs, effect, 314-315
employee attitudes and approval of smoking policies, 311-312, 315
lung cancer case-control study in four hospitals, 84-86
smoking policies, positively worded signs and enforcement factors in compliance, 310
smoking policies, review of current evidence on impact, 308-309
INDEX

HOSPITALS—Contd.
  State legislation restricting smoking, 269

IMMUNE SYSTEM
  cigarette smoking effects, 244

INFANTS
  respiratory diseases, parental smoking as risk factor, 10
  respiratory system effects of involuntary smoking, 38-59
  time-location patterns, 144
  tracheobronchial smoke particle deposition, mathematical model prediction, 192

INVOLUNTARY SMOKING
  (See also ENVIRONMENTAL TOBACCO SMOKE; NONSMOKERS)
  absorption vs. active smoking, 215-216
  absorption of constituents under experimental and natural exposure, 206-207
  adult asthmatics, lung function effects, 63, 65
  allergic persons, irritant effect, 239
  assessment of nonsmoker’s exposure, 307
  atmospheric vs. biological markers of ETS absorption in disease risk estimation, 200-201
  bronchoconstriction and asthma in children of parents who smoke, 55-58
  bronchoconstriction in normal adult nonsmokers, 63
  cancer other than lung cancer, risk relationship, 102-104
  carbon monoxide as biological marker of ETS exposure, 201-202
  cardiovascular disease risk, prospective and case-control studies, 105-106
  children, brain cancer risk, 104
  children, lung function effects (table), 50-52
  children, nonuniform deposition of particles in respiratory disease risk, 192
  children, parental smoking as factor in saliva cotinine concentrations, 207-208
  children, respiratory disease relationship (table), 39-41
  children, respiratory symptoms relationship (table), 45-46
  children, respiratory symptoms risk, 44, 47-49
  children, risk of cancer other than lung cancer, 102-104
  cotinine in body fluids as measure of nicotine absorption, 205
  cotinine level in saliva, blood, and urine as ETS exposure marker, 36
  cumulative, duration, and intensity influences health risks, 33
  disease risk estimation, value of biological markers of ETS absorption, 200-201
  ETS vapor phase components, retention, 126-127
  exposure to sidestream and mainstream smoke components, 8
  eye and nasal irritation, smoke concentration vs. duration as factors, 235
  health effects and public attitudes as factors in smoking restrictions, 265
  health hazards, increasing evidence as factor in regulation, 282, 286
  health risks, 6-7, 107-108
  infants and children, bronchitis and pneumonia risk, 38, 42-44
  infants and children, respiratory system effects, 38, 59
  inflammatory cell numbers and functions in smokers, inferences, 244-245
  irritant effects in nonsmokers in restaurants and offices, 232
  irritation from gas phase vs. whole sidestream smoke, 236-238
  lung cancer dose-response relationship, problems in exposure determination, 92-93
  lung cancer in spouses of smokers, prospective and case-control studies (table), 71
  lung cancer in wives of smokers, Japanese prospective study, 73-76
INDEX

IN Voluntary Smoking—Contd.

l lung cancer relationship, relative risk, 72
l lung cancer risk, American Cancer Society Cohort Study, 76–77
l lung cancer risk assessment, importance of definition of exposure, 92
l lung cancer risk, bias in case–control studies (table), 98
l lung cancer risk, epidemiological evidence, 97–98
l lung cancer risk, evidence from case–control studies, 97
l lung cancer risk factor in children, 90–91
l lung cancer risk factor in non-smokers, 13
l lung cancer risk in nonsmokers, Hong Kong case–control studies, 80–81
l lung cancer risk in spouses of smokers, Louisiana case control study, 79–80
l lung cancer risk in spouses of smokers, Scottish study, 77–78
l lung cancer risk in wives of smokers, Greek case–control study, 78–79
l lung cancer risk relationship, case–control studies (table), 68–70
l lung cancer risk relationship, Los Angeles County study, 83
l lung cancer risk relationship, preliminary findings of U.S. study, 82
l lung cancer risk relationship, prospective studies (table), 67
l lung cancer risk relationship, summary and conclusions, 96–102
l lung cancer risk relationship, the Four Hospitals case–control study, 84–86
l lung cancer risk relationship, the German case–control study, 90
l lung cancer risk relationship, the Japanese case–control study, 85–89
l lung cancer risk relationship, the Swedish case–control study, 89–90
l lung cancer risk relationship, the United Kingdom case–control study, 86–88

IN Voluntary Smoking—Contd.

l lung cancer risk, study power of case–control studies (table), 99–100
l lung disease risk, extrapolation from risk in smokers, 30–31
l lung function effects in adult non-smokers, 60, 62
l lung function effects in adults (table), 61
l lung function effects in healthy adults (table), 64
l mathematical models of lung cancer risk, 93–96
l middle ear effusions and diseases in children, risk relationship, 58–59
l misclassification of smoking status and exposure as factors in determining risk, 66–67, 72–73
l nicotine and cotinine levels as exposure markers under real-life conditions, 207
l nicotine and cotinine to quantify ETS exposure, 208, 215
l organization of the 1966 Report, 5
l personal monitoring to measure exposure, 33–34
l personal monitors to measure ETS concentrations, 164–167
l public and workplace smoking restrictions, conclusions of 1986 report, 324
l public awareness of health hazards as factor in changing attitudes, 320
l quantitative and qualitative differences in exposure from active smoking, 23–24
l questionnaires for estimating exposure, uses and limitations, 34–35
l research recommendations, 321–323
l respirable suspended particulate levels as marker of smoke exposure, 8
l respiratory system effects in children, case–control studies, 43–44
l respiratory system effects in children, cross-sectional studies, 43
l respiratory system effects in infants and children, longitudinal studies, 38, 42–43
l State legislation in 1970s aimed at protecting nonsmokers, 267
INDEX

IN Voluntary Smoking—Contd.
summary and conclusions of 1986 report, 12-13
thiocyanate levels not specific for exposure, 203
toxicity, mathematical model for estimating using "cigarette equivalents", 198-200
urinary nicotine and expired carbon monoxide in nonsmokers following exposure, 207
workplace, lung cancer risk relationship, 91-92
workplaces, current status of smoking regulations, 285-303

Irritation
(See also Respiratory Symptoms)
acute effects of ETS exposure, 229-239
allergic persons, ETS exposure effect, 239
annoying and irritating effects of ETS, 231-239
children exposed to ETS, 239
ETS exposure effects, conclusions, 252
nonsmokers, experimental studies of ETS exposure effects, 233-239

Laboratory Smoking
chemical analysis of sidestream smoke in special chambers, 127-129, 132
mainstream and sidestream composition data collection, 125
mainstream smoke particle size distribution (table), 164-165
particle size of mainstream smoke aerosol, measurement, 182-183, 186
sidestream smoke particle size distribution (table), 186

Legislation—Contd.
emission shift and increase in State legislation during the 1970s, 267
Federal, State, and local to restrict smoking, 266-278
impact on smoking behavior, assessment, 300-307
local, California's nonsmokers' rights movement as factor, 277
Minnesota, landmark Clean Indoor Air Act of 1975, model for other States, 267
nonsmoking sections in restaurants mandated by State laws, 280
rate of new State legislation continues into 1980s, 268
regional variation in State laws against smoking (table), 277
restrictions and bans on smoking, 16
review of impact on smoking behavior, 320-321
smoking regulations, conclusions of 1986 report, 324
social norms and public attitudes as factors in passage, 321
State and local laws and Federal regulation in health care facilities, 284-285
State and local laws on public smoking, influence on private sector, 295
State and local smoking control statutes, implementation evaluation, 316-318
State, increase in comprehensiveness of smoking regulations since 1970, 275
State laws regulating smoking in public places and workplaces (table), 271-274
State laws restricting smoking, 1970-1985 (table), 269
States with no regulations against smoking, 268
student smoking, legal incentive for regulation by schools, 282
tobacco-producing States have less restrictive laws on smoking, 275-276
workplace smoking, early controversy, 286

345
LEGISLATION—Contd.
workplace smoking, private sector, State and local laws, 285
workplace smoking, regulation, variations in State laws, 270, 275

LEUKEMIA
children of women who smoked during pregnancy, risk relationship, 103-104

LEUKOCYTES
polymorphonuclear, lung disease risk relationship in smokers, 243-244

LUNG CANCER
(See also CANCER)
animals exposed to cigarette smoke, 248-249
confounding variables in studies of ETS risk in nonsmokers, 36
ETS as risk factor in nonsmokers, 8-10
ETS exposure as risk in nonsmokers, Hong Kong case-control studies, 83-84
ETS risk relationship, need for more accurate estimates of exposure, 102
involuntary smokers, study power of case-control studies (table), 99-100
involuntary smoking as factor, American Cancer Society Cohort Study, 76-77
involuntary smoking as factor, Los Angeles County study, 83
involuntary smoking as factor, preliminary findings of U.S. study, 82
involuntary smoking as factor, relative risk, 72
involuntary smoking as factor, the Four Hospitals case-control study, 84-86
involuntary smoking as factor, the German case-control study, 90
involuntary smoking as factor, the Japanese case-control study, 88-89
involuntary smoking as factor, the Swedish case-control study, 89-90

LUNG CANCER—Contd.
involuntary smoking as factor, the United Kingdom case-control study, 86-88
involuntary smoking as risk factor, bias in case-control studies (table), 98
involuntary smoking as risk factor, case-control studies (table), 68-70
involuntary smoking as risk factor, prospective studies (table), 67
involuntary smoking as risk factor, summary and conclusions, 96-102, 107
involuntary smoking dose-response relationship, problems in exposure determination, 92-93
mathematical models of ETS exposure risk in nonsmokers, 93-96
methodological issues in assessing involuntary smoking risk, 66-67, 72-73
mortality in nonsmoking wives of smokers, 27
nonsmokers, case-control study evidence of ETS exposure as risk factor, 97
nonsmokers, epidemiological evidence of ETS exposure as risk factor, 97-98
nonsmokers, involuntary smoking as risk factor, 13, 66-101
nonsmokers, projection of ETS risk from relationship with smoking in smokers, 26-27
nonsmoking spouses of smokers, Louisiana case-control study, 79-80
nonsmoking spouses of smokers, potential bias in Japanese study, 74-75
nonsmoking spouses of smokers, Scottish study, 77-78
nonsmoking wives of smokers, Japanese prospective study, 73-76
nonuniform carcinogenic particle deposition as possible risk factor, 192
parental smoking as risk factor, 90-91
sample size of concern in studies of nonsmokers, 22
smoking as major risk factor, 6
INDEX

LUNG CANCER—Contd.
spousal smoking as risk factor, prospective and case-control studies (table), 71
women married to smokers, Greek case-control study, 78-79

LUNG DISEASES
(See also RESPIRATORY TRACT DISEASES)
active smokers, extrapolation of risk in involuntary smokers, 30
bronchiolitis, early pathologic lesions in smokers, 241

LUNG FUNCTION
adult asthmatic nonsmokers exposed to cigarette smoke, 63, 65
adults exposed to involuntary smoking (table), 61
asymptomatic adults, long-term workplace exposure as risk factor, 60
children and adolescents who start to smoke, 28
children and adults, conclusions about ETS exposure risk, 107
children, information needed on relationship with ETS exposure, 32
children, involuntary smoking risk relationship (table), 50-52
children, maternal smoking relationship, 49, 53-54
healthy nonsmokers exposed to cigarette smoke (table), 64
nonsmokers, ETS as factor in decline, 10
nonsmokers, extrapolation of ETS risk from risks in smokers, 27

LUNGS
(See also RESPIRATORY SYSTEM)
carbon monoxide deposition kinetics as factor in variations in concentration, 201-202
children of parents who smoke, possible long-term effects, 44
cigarette smoking effect, implications for chronic ETS exposure, 239
cigarette smoking effects, summary, 246-247
inflammatory cell function, experimental models of cigarette smoke inhalation, 245-246
LUNGS—Contd.
inflammatory cells, cigarette smoking effect, 241-246
inflammatory lesions in smokers vs. nonsmokers, 245
parenchyma alterations in smokers, 246
parenchyma destruction by polymorphonuclear elastase in smokers, 243
regional deposition of mainstream smoke particles in smokers, 189, 191
respirable particle deposition, non-uniformity, 191-192
sidestream smoke particle deposition, mass median diameter as factor, 197

MAINSTREAM SMOKE
(See also CIGARETTE SMOKE, SIDESTREAM SMOKE, SMOKE STREAMS, TOBACCO SMOKE)
condensates, in vitro assays of mutagenic activity, 250-251
definition, 7
electrical charge as factor in particle deposition, 187
particle size distribution studies, 140
particle size distribution (table), 184-185
regional deposition in respiratory tract of smokers, 189, 191
respiratory system deposition vs. sidestream smoke (table), 190

MATERNAL SMOKING
(See also PARENTAL SMOKING)
asthmatic children, risk relationship, 55-58
brain tumors in children, risk relationship, 104
cancer other than lung cancer in children, risk relationship, 103-104
health risks for fetus and neonate, 6
leukemia in children of women who smoked during pregnancy, 103
lung function in children, risk relationship, 49, 53-54
lung function in children, risk relationship (table), 50-52
INDEX

MATERNAL SMOKING—Contd.
respiratory illness in children, case-control studies of risk, 43-44 respiratory illness in children, cross-sectional studies of risk, 43 respiratory illness in infants and children, 38, 42-43

MATHEMATICAL MODELS
airways deposition of sidestream smoke suggested, 217 humidity effect on particle size and deposition, 187-188 lung cancer risk of ETS exposure, 93-96 particle deposition patterns, effect of cigarette tar content, 191 regional deposition of polydisperse aerosols, 189 respirable suspended particulate constituent of ETS for exposure prediction, 165 respiratory tract deposition of sidestream smoke particles, 186-187 tracheobronchial smoke particle deposition prediction, age as factor, 192

MINNESOTA
landmark Clean Indoor Air Act, model for other States, 267 public approval of 1975 Clean Indoor Air Act, 318-319

MORTALITY
cancers other than lung cancer, standard ratios for wives of smokers, 102 lung cancer, establishing risk in nonsmokers, 95-97 lung cancer in ETS exposed nonsmokers, American Cancer Society Cohort Study, 76-77 lung cancer in nonsmoking wives of smokers, 27 lung cancer in spouses of smokers, Scottish study, 77-78 lung cancer in wives of smokers, Japanese prospective study, 73-76 maternal smoking as risk factor for infant mortality, 6

MOTIVATION
cessation of smoking, public attitudes and restrictions as reinforcement, 305 worker safety not health as factor in early smoking regulations, 287 workplace smoking policies, effect on smoking cessation attempts, 313-314 workplace smoking regulation, 295-296

NICOTINE
(See also TOBACCO SMOKE CONSTITUENTS)
absorption in nonsmokers to assess lung cancer risk, 9 absorption in populations suggests ETS exposure is common, 15 acute toxicity in animals as factor in smoke carcinogenicity testing, 247 atmospheric levels as marker of ETS exposure, 33 biological fluid levels, promising tracer of ETS exposure, 165-166 blood levels, metabolism, and excretion rate to determine intake, 203-204 body fluid levels as marker of smoke exposure in nonsmokers, 8 body fluid levels increase with reported ETS exposure, 15, 217 body fluid levels specificity for tobacco or tobacco smoke exposure, 204 ETS as source in general environment, 14, 169 ETS exposure determination, specificity, 147 ETS exposure quantification, 208, 215 ETS tracer, need for proper validation, 168 measurement under realistic conditions (table), 155-156 personal air monitoring for intake determination, 216 plasma and urine levels from intravenous infusion vs. ETS exposure in nonsmokers, 210
INDEX

NICOTINE—Contd.
plasma, urine, saliva levels in non-smokers vs. active smokers, 209-210, 216
suspended particulate levels as measurement of ETS exposure, 193
tobacco smoke exposure determination, absorption, distribution, metabolism, 203-205
vapor phase of sidestream vs. mainstream smoke, 127

NITROGEN OXIDES
carcinogenic potential of oxides of nitrogen in sidestream smoke, 129
irritant in ETS, 229
measurement under realistic conditions (table), 157
nitrogen dioxide in sidestream smoke, carcinogenic potential, 129

NITROSAMINE CONTENT
N-nitrosamines in sidestream vs. mainstream smoke, 129

NITROSAMINES
ETS as only source of some N-nitrosamine compounds in general environment, 169
ETS exposure determination, specificity, 147
measurement under realistic conditions (table), 158
sidestream smoke levels higher than in mainstream smoke, 14

NONSMOKERS—Contd.
emphysema risk vs. smokers, genetic predisposition as factor, 246
ETS as lung cancer risk factor, problems in exposure determination, 92-93
ETS-exposed, plasma, urine, saliva cotinine vs. active smokers (table), 211-214
ETS-exposed, plasma, urine, saliva nicotine vs. active smokers (table), 209-210
ETS exposure, experimental studies of irritant effects, 233-239
ETS exposure, relationships with active smoking provide insight into risks, 26-28
ETS exposure toxicity, mathematical model using "cigarette equivalents", 198-200
ETS exposure, wide variations, 14
health risks of ETS exposure, conclusions, 107-108
health risks of involuntary smoking, summary and conclusions, 12-13
irritant effects of involuntary smoking in restaurants and offices, 232
irritation from sidestream smoke vs. gas phase sidestream smoke, 236-238
irritation from smoke exposure, concentration vs. duration as factors, 235
lung cancer, establishing risk of ETS exposure, 96
lung cancer, ETS exposure as factor, Four Hospitals case-control study, 84-86
lung cancer, ETS exposure as factor, German case-control study, 90
lung cancer, ETS exposure as factor, Hong Kong case-control study, 80-81
lung cancer, ETS exposure as factor, Japanese case-control study, 88-89
lung cancer, ETS exposure as factor, Los Angeles County study, 83
INDEX

NONSMOKERS—Contd.
lung cancer, ETS exposure as factor, preliminary findings of U.S. study, 82
lung cancer, ETS exposure as factor, Swedish case-control study, 89–90
lung cancer, ETS exposure as factor, United Kingdom case-control study, 86-88
lung cancer in spouses of smokers, prospective and case-control studies (table), 71
lung cancer, involuntary smoking as risk factor, 13
lung cancer risk from ETS exposure, 8-10
lung cancer risk from ETS as projection of relationship of smoking in smokers, 26-27
lung cancer risk in spouses of smokers, Japanese prospective study, 73-76
lung cancer risk in spouses of smokers, Louisiana case-control study, 79-80
lung cancer risk in spouses of smokers, Scottish study, 77-78
lung cancer risk of ETS exposure, American Cancer Society Cohort Study, 76-77
lung cancer risk of involuntary smoking, case-control studies (table), 68-70
lung cancer risk of involuntary smoking, more accurate data needed, 102
lung function in healthy adults exposed to cigarette smoke (table), 64
mathematical models of lung cancer risk with ETS exposure, 93-96
misclassification of status and ETS exposure as factors in determining risk, 66-67, 72-73
nicotine and cotinine to quantify ETS exposure, 208, 215
odor perception and irritation, influence of room temperature and humidity, 234
plasma and urine nicotine levels, intravenous vs. ETS exposure effect, 215

NONSMOKERS—Contd.
plasma, saliva, and urine nicotine and cotinine levels vs. active smokers, 216
preferential hiring, most restrictive smoking policy, 301-302
private, local, governmental actions for protection from smoke exposure, 265
respirable suspended particulates in ETS exposed vs. nonexposed, 160
review of impact of smoking restrictions on attitudes, 320
separation from smokers for risk reduction, effectiveness, 11-12
State antismoking legislation in 1970s aimed at protection, 267
temporal and spatial distribution of smokers in ETS exposure determination, 145-146
urinary cotinine levels in ETS-exposed vs. nonexposed men, 207
urinary nicotine and expired carbon monoxide, effects of smoke exposure, 207
workplace bans for maximum protection, momentum growing among large employers, 301
workplace demands for clean air as motivation for smoking regulations, 296
workplace smoking as eye irritant, 233
workplace smoking as lung cancer risk factor, 91-92

NOSE
annoying and irritating effects of ETS exposure, 231, 235
ETS particle deposition, effect of nasal inhalation, 180
smoke concentration vs. exposure duration as factors in irritation, 235

PARENTAL SMOKING
(See also MATERNAL SMOKING)
cancers other than lung cancer in children, risk relationship, 102-105
cough, phlegm, and wheezing in children, 44, 47-49
lung cancer risk relationship, 90-91
lung function in children, relationship (table), 50-52
INDEX

PARENTAL SMOKING—Contd.
  lung function in children, risk relationship, 53–54
  middle ear effusions and diseases in children, risk relationship, 66–69
  respiratory illness in infants and children, 38, 42–44
  respiratory symptoms in children, 13
  respiratory symptoms in children, relationship (table), 45–46
  respiratory system effects in children, 38–39
  saliva cotinine concentrations in children, effect, 207–208

Passive Smoking See INVOLUNTARY SMOKING

PHYSICAL ACTIVITY
  ETS deposition increase with increasing activity, 187

PREGNANCY
  fetal exposure to tobacco smoke constituents, possible effects, 31–32
  leukemia risk in children of smokers, 103

PUBLIC PLACES (See also HOSPITALS; WORKPLACE)
  current status of smoking regulations mix of public and private actions, 265–266
  employee attitudes before smoking policy implementation, 311
  health care facilities, public support of smoking restrictions, 284
  health care facilities, smoking regulations, 283–285
  hotels and motels, smoking regulations, 281–282
  impact of public and workplace policies restricting smoking, 303–321
  interstate transportation, smoking regulated at Federal level, 278
  legislation restricting smoking, evaluation of impact, 316–318
  local smoking regulations, 277–278
  public transportation, smoking regulations, 278–279

PUBLIC PLACES—Contd
  research recommendations on effects of smoking regulations, 321
  restaurants, opposition, acceptance, and implementation of smoking restrictions, 280
  restaurants, smoking regulations, 279–281
  retail stores, smoking regulations, 279
  schools, smoking regulations, 282–283
  smoking regulation, State laws (table), 271–274
  smoking regulations, conclusions of 1986 report, 324
  smoking regulations, factors in acceptability, 266
  smoking regulations in specific public places, 278–285
  smoking regulations, public approval, national and regional polls, 318–319
  smoking restrictions, variations in current State legislation, 268–270
  State laws regulating smoking, comprehensiveness index, 327–328
  State legislation to restrict smoking, increase during the 1970s, 267
  States restrict smoking in transportation, hospitals, elevators, and others, 269
  total suspended particulates (table), 194–195

PULMONARY ALVEOLAR MACROPHAGES
  lung injury relationship in smokers, 241–243, 245
  protease-antiprotease balance in lungs of smokers, influence, 242–243
  respiratory bronchioles of smoke-exposed animals, 245–246

PYRIDINES
  sidestream vs. mainstream smoke levels, 129

RADIATION
  decay products of radon in tobacco smoke, 132, 134
  ETS radioactivity, 134
INDEX

REDUCTION OF SMOKING
(See also CESSATION OF SMOKING)
public attitudes and smoking policies as indirect influences, 304-305

RESIDENCES
total suspended particulates (table), 195-196

RESPIRABLE SUSPENDED PARTICulates
enclosed places, ETS role, 169
ETS-exposed and nonexposed samples, percentage distribution, 167
hospital before and after adopting restrictive smoking policy, 311
irritants in ETS, 229
marker for ETS exposure, 33-34
personal monitors to measure ETS exposure, 166-168
residential levels as function of number of smokers (table), 164
respiratory disease risk in children of smokers, 192
tracheobronchial deposition in infants vs. adults, prediction, 192

RESPIRATORY FUNCTION TESTS
children, involuntary smoking as risk factor, 53-54
nonsmokers exposed to involuntary smoking, 62-63
predicted levels, relationship with number of cigarettes smoked, 29

RESPIRATORY SYMPTOMS
(See also COUGH; IRRITATION; NOSE)
annoying and irritating effect of ETS exposure, 231-232, 238-239
children and adolescents who start to smoke, 27
children and adults, ETS exposure as factor, conclusions, 107
children, parental smoking as factor, 13
children, relationship with involuntary smoke exposure (table), 45-46
cough, phlegm, and wheezing in adults, ETS exposure as risk not established, 60

RESPIRATORY SYMPTOMS—Contd
cough, phlegm, wheezing in children, parental smoking as factor, 44, 47-49
involuntary smokers, 31

RESPIRATORY SYSTEM
(See also LUNGS)
animals, carcinogenicity of cigarette smoke, 247-248
breathing pattern and particle size distribution effect on ETS dose, 25
breathing patterns as factor in sidestream smoke deposition, 187
bronchoconstriction in children, parental smoking as risk factor, 55-58
bronchoconstriction in normal adults exposed to involuntary smoking, 63
cigarette smoking effects, implications for involuntary smoking risks, 239-241
deposition and absorption of tobacco smoke constituents, 181-216
deposition of mainstream and sidestream smoke, 25
enzyme activity in smoke-exposed animals, 245
epithelial cells, dose-response effect of cigarette smoking, 239
ETS deposition, 193-216
ETS dose, product of mass in inhaled air and deposition fraction, 193
hyperplasia and metaplasia in trachea and bronchi of smoke-exposed animals, 248
involuntary smoking effects, 37-65
mass deposition of ETS, estimation, 193
nasal vs. mouth inhalation of ETS, effect on particle deposition, 189
nose, throat, and airway irritation from smoke exposure, 11
particle size of cigarette smoke as factor in deposition, 182
puffing and inhalation patterns as factor in particle deposition, 183
regional deposition of smoke particles, 189, 191
sidestream and mainstream smoke deposition (table), 190
RESPIRATORY SYSTEM—Contd.
sidestream smoke particle deposition, 186–189
smoke particle size as factor in regional deposition, 189, 191–192

RESPIRATORY TRACT CANCER
animals exposed to cigarette smoke, 248

RESPIRATORY TRACT DISEASES
acute illness in children, parental smoking as risk factor, 38, 42–44
asthma in children, maternal smoking as risk factor, 55–58
children, case–control studies of paternal smoking as risk factor, 43–44
children, nonuniform deposition of smoke particles as risk factor, 192
children, parental smoking as factor, 13
children, parental smoking as risk factor, 38–59
early childhood, involuntary smoking relationship (table), 39–41
involuntary smoking as risk factor, 10
nonsmoking adults and children, involuntary smoking as factor, 37–66
pneumonia in children of smokers, conclusions about risk, 107
population characteristics as factor in ETS risk, 28
smoking as major risk factor, 6

RESPIRATORY TRACT INFECTIONS
children of smokers, conclusions about risk, 107
infants, ETS exposure as risk factor, 31

SALIVA—Contd.
icotine levels in ETS-exposed nonsmokers vs. active smokers (table), 209–210
nicotine levels in nonsmokers vs. smokers, 216

SIDESTREAM SMOKE
(See also CIGARETTE SMOKE; MAINSTREAM SMOKE; SMOKE STREAMS; TOBACCO SMOKE)
bioassays needed to determine genotoxicity, 252
carbon monoxide and carbon dioxide levels vs. mainstream smoke, 129
carcinogen levels vs. mainstream smoke, 24
carcinogenic potential, effect of levels of oxides of nitrogen, 129
carcinogenicity vs. mainstream smoke in animal models, 252
chemical analysis, 127–129, 132
chemical composition as factor in estimating exposure using "cigarette equivalents", 199
component levels, combustion temperature effect vs. mainstream smoke, 128–129
carcinogen formation vs. mainstream smoke, 7–8
definition, 7
experimental and mathematical models show deposition in airways, 217
formaldehyde and acrolein concentrations above occupational limits, 230
formation and physiochemical nature, 127
inhalation effects in laboratory animals not reported, toxicity factor, 249
irritation in nonsmokers vs. gas phase sidestream smoke vs. acrolein, 236–237
irritation of nonsmokers in laboratory, ventilation as factor, 234–235
laboratory collection devices, 125–126
major source of ETS, 125

cotinine levels in ETS-exposed nonsmokers vs. active smokers (table), 209–210
nicotine levels in nonsmokers vs. smokers, 216
INDEX

SIDESTREAM SMOKE—Contd
mass median diameter, effect on deposition in respiratory tract, 187
mathematical models of particle deposition in respiratory tract, 186–187
nicotine in vapor phase vs. mainstream smoke, 127
particle distribution in respiratory tract, 186–189
particle size distribution studies (table), 138
particle size distribution (table), 186
particles, number and size distribution, 137, 139
particulate matter vs. mainstream smoke, 129, 132
particulate phase as major determinant of irritation in nonsmokers, 237–238
physiochemical nature and spectrum of carcinogens, summary, 251–252
regional deposition in respiratory tract, particle size as factor, 189, 191–192
respiratory system deposition vs. mainstream smoke (table), 190
saliva nicotine levels as indicator of exposure, 204–205
toxic and carcinogenic agents, 21
toxic and carcinogenic compounds, 14
toxic and carcinogenic compounds vs. mainstream smoke, conclusions, 169
tumor induction by condensate on mouse skin vs. mainstream smoke condensate, 250
vapor and particulate phase constituents, sidestream to mainstream ratio (table), 130–131

SMOKE INHALATION, ANIMAL
carcinogenicity testing, 247–250
laryngeal leukoplasias in hamsters, 248–249
lung and respiratory cancers in mice and rats, 248
lung inflammatory cell function, experimental models, 245–246

SMOKE STREAMS
(See also CIGARETTE SMOKE; MAINSTREAM SMOKE; SIDESTREAM SMOKE; TOBACCO SMOKE)
combustion temperature effect on components of sidestream vs. mainstream smoke, 128–129
mainstream and sidestream smoke, comparison, 23–25
mainstream smoke vs. ETS, chemical composition, 135, 137
mainstream vs. sidestream smoke from unfiltered cigarette, comparison (table), 128
particulate matter in mainstream and sidestream smoke, 129, 132
sidestream and mainstream smoke inhalation by smokers and involuntary smokers, 126–127
toxic and carcinogenic agents in indoor mainstream vs. ETS (table), 136
vapor and particulate phase constituents, sidestream to mainstream ratio (table), 130–131

SMOKING
immune system effects, 244
public knowledge and attitudes, policy impact assessment by surveys, 307
public places and workplaces, State regulations (table), 271–274
regulatory approaches of State and local governments, 278

SMOKING CHARACTERISTICS
compensatory smoking by workers following smoking policy implementation, 312–313
machine smoking simulation, inconsistency with current patterns, 126–127
puffing and inhalation effect on particle deposition, vs. machine smoking, 183

SMOKING CONTROL PROGRAMS
evaluation, methodological considerations, study design as factor, 306–308
guides on how to adopt and implement regulatory policies, 302

354
SMOKING CONTROL
PROGRAMS—Contd.
"individual solution" approach to control workplace smoking, 298
separating smokers and nonsmokers, improving workplace ventilation, 299
workplace cessation of smoking programs as part of control policies, 297
workplace restrictions on where smoking is allowed, variations, 299-300

SMOKING HABIT
cost and benefit analysis, 321
population group differences in ETS exposure determination, 140-146
research recommendations on effect of smoking restrictions, 322
smoking restrictions with most impact on behavior, research needed, 323

SMOKING MACHINES
(See also LABORATORY SMOKING)
human smoking simulation inconsistent with current patterns, 126-127
standard conditions for machine smoking cigarettes, 125

SMOKING REGULATIONS
(See also LEGISLATION)
assessment of effect on air quality, 307
average restrictiveness of State laws, 1960-1985 (figure), 278
case-control studies of impact on human behavior, evaluation, 306
current State legislation, variations, 268-270
designated smoking or no-smoking areas to control workplace smoking, 299-300
employer-mandated policies in the private sector, opposition, 296-297
enforcement costs, experience contradicts tobacco industry estimates, 316

INDEX

SMOKING REGULATIONS—Contd.
geographic variability of State laws on smoking in public places (figure), 270
health care facilities, 283-285
health care facilities, public support, 284
health care facilities, variations in policies, 284-285
hospitals, awareness and compliance, 308-310
hospitals, effect on air quality, 311
hospitals, employee approval of policies, 312
hospitals, positively worded signs and enforcement factors in compliance, 310
hospitals, review of current evidence of impact, 308-309
hotels and motels, private initiative in response to perceived demand, 281-282
hotels and motels, public support, 281-282
impact on air quality, behavior, attitudes, 303-321
implementation, 309-310
implementation, assessment of impact, 307-308
implementation of workplace policies, 302-303
implementation, smokers' support as factor, 303-304
legislation to restrict smoking in public places, 266-276
local legislative restrictions, 277-278
local restrictions, California's nonsmokers' rights movement as factor, 277
nonsmoker's exposure to secondhand smoke, assessment of impact, 306
policy components that impact on smoking behavior, research needed, 323
preferential hiring of nonsmokers as most restrictive policy, 301-302
public and private organizations, employees' attitudes, 311-312
public and workplace, conclusions of 1986 report, 324

355
SMOKING REGULATIONS—Contd.

public and workplace control policies, indirect effects, 304-305
public and workplace restrictions, review of impact, 303-321
public approval, national and regional polls, 318-319
public awareness, compliance, and enforcement of violations in implementation, 303
public places and workplaces, Federal, State, and local action, 15-16
public places and workplaces, State laws (table), 271-274
public places, current status mix of public and private actions, 265-266
public places, factors in acceptability, 266
public places, role of public attitudes and social norms, 321
public support, 16
public transportation, 278-279
regional variation in State laws against smoking (table), 277
research must consider policy characteristics, institution, and population, 321-323
research recommendations, 321-323
restaurants, 279-281
restaurants, opposition, acceptance, and implementation, 280
retail stores, 279
review of impact on attitudes and social norms, 319-320
schools, difficulties in enforcement, 280
schools, double standard of teacher smoking vs. student restrictions, 283
schools, traditionally not to reduce sidestream smoke exposure, 282
social phenomenon, impact information lacking, need for research, 323
specific public places, 278-285
State and local governments, restrictions, 12
State and local statutes, implementation evaluation, 316-318
State laws, comprehensiveness index, 327-328

INDEX

SMOKING REGULATIONS—Contd.

State laws restricting smoking, 1970-1985 (table), 269
State legislation, emphasis shift and increase during the 1970s, 267
State legislation in 1970s aimed at protecting nonsmokers, 267
State legislation, increase in comprehensiveness, 275
States with no smoking legislation, 268
tobacco-producing States, fewer enacted and less restrictive, 270-276
worker safety as motivation for early policies, 287
workplace ban, complexity of assuring compliance, 301-302
workplace bans, usually preceded by progressively stricter regulations, 300-301
workplace, barriers to adopting policies, 296-297
workplace, categories of policies, 298
workplace compliance with local ordinances, type of business as factor, 317
workplace, current evidence of impact, 308-309
workplace, current status, 285-303
workplace, early controversy in the private sector, 286
workplace, economic considerations apparently not a factor, 296
workplace, effect on smoking cessation motivation and success, 313-315
workplace, employee attitudes before policy implementation, 311
workplace, impact on absenteeism, health care costs, productivity, turnover, 315-316
workplace, impact on health care and maintenance costs, 305
workplace, influence of nonsmokers' demand for clean air, 288
workplace, nature, scope, and prevalence in the 1980s, 294-295
workplace, policy implementation effect on smokers' behavior, 312-313

356
INDEX

SMOKING REGULATIONS—Contd.
workplace, prevalence, 286-287, 294-295
workplace, public vs. private sector, 270
workplace, worker health, State legislation, nonsmokers' demands as factors, 295-296
workplace, workforce size, industry type, geographic location as factors, 295
workplaces, survey data 1977-1986 (table), 288-293

SMOKING STATUS
(See also SMOKING HABIT)
misclassification as factor in determining ETS risk, 98, 101
misclassification as factor in determining health risks of involuntary smoking, 66-67, 72-73

SMOKING SURVEYS
workplaces, 287, 294-295

STATISTICS
significance testing of ETS risks, 36-37

TARS, CIGARETTE
carcinogenicity testing in animals, 247-248
chemical assay for human exposure to components, research goal, 217
tumor induction on mouse skin, sidestream vs. mainstream condensates, 250

TARS, TOBACCO
particulates measured under realistic conditions (table), 159-162
sidestream smoke particle size distribution studies (table), 198

THIOCYANATES
sources, metabolism, elimination, half-life, 202-203

TOBACCO SMOKE
(See also CIGARETTE SMOKE; MAINSTREAM SMOKE; SIDESTREAM SMOKE; SMOKE STREAMS)
absorption during active smoking vs. involuntary smoking, 215-216
biological markers of smoke absorption in smokers and nonsmokers, 181
machine vs. human smoking, non-comparability of chemical and physiochemical data, 136
mainstream vs. environmental, characteristics, 6
nicotine in vapor phase, sidestream vs. mainstream, 127
odor perception and irritation, influence of room temperature and humidity, 234
particle size distribution of mainstream smoke (table), 184-185
particle size distribution of sidestream smoke (table), 186
quantitatively determined compounds in sidestream and mainstream smoke, 128
radioactivity, 132, 134
residuals, measured under realistic conditions (table), 169
vapor phase, retention by smokers vs. involuntary smokers, 126-127
workplace air pollution, contribution (table), 233

TOBACCO SMOKE CONSTITUENTS
(See also COTININE; NICOTINE)
absorption in nonsmokers under experimental and natural exposures, 206-207
chemical assay for human exposure to tar components, research goal, 217
deposition and absorption, 181-216
deposition fraction of individual components needed to determine disease risk, 200
ETS and mainstream differences as factor in exposure of nonsmokers vs. smokers, 201
ETS exposure quantification, 208, 215
irritants also produced by other sources, 229-230
irritants in ETS, 229
nicotine, absorption, distribution, metabolism, and body fluid levels, 203-205
INDEX

TOBACCO SMOKE CONSTITUENTS—Contd.
particle deposition in lung areas, nonuniformity, cancer risk relationship, 192
trapping devices to analyze individual components, 136

TOBACCO SMOKE PARTICULATES
carcinogenicity testing in animals, 247-248
indoor concentrations by cigarette smoking under laboratory conditions (table), 197
irritation in nonsmokers vs. gas phase of sidestream smoke, 237-238
potential toxicity estimation using "cigarette equivalents", deficiencies, 199
total suspended particulates in indoor working and living environments (table), 194-196

URINE
cotinine level as marker for ETS exposure in nonsmokers, 36
cotinine levels in ETS-exposed nonsmokers vs. active smokers (table), 211-214
cotinine levels in ETS-exposed vs. nonexposed men, 207
mutagenic activity not good measure of tar absorption, 206
nicotine and cotinine levels to quantify ETS exposure, 206, 215
nicotine excretion, individual metabolism as factor in smokers and nonsmokers, 203-205
nicotine levels in ETS-exposed nonsmokers vs. active smokers (table), 209-210
nicotine levels in nonsmokers vs. smokers, 216

VENTILATION—Contd.
sidestream smoke in laboratory, effect on perceived irritation in nonsmokers, 234-235

WOMEN

cancers other than lung cancer in nonsmokers married to smokers, 102
lung cancer in wives of smokers, Greek case-control study, 78-79
lung cancer, involuntary smoking as factor, German case-control study, 90
lung cancer risk in wives of smokers, Japanese prospective study, 73-76
lung cancer risk with ETS exposure, Hong Kong case-control studies, 80-81

WORKPLACE

(See also PUBLIC PLACES)
barriers to adopting smoking policies, 296-297
carbon monoxide, nitrogen, and particulate matter levels due to tobacco smoke, 232
categories of smoking policies, 298
compliance with local smoking ordinances, type of business as factor, 317
health care and maintenance cost reduction as benefit of smoking policy, 305
hospitals, employee approval of smoking policies, 312
involuntary smoking, irritant effects, 232
irritants, tobacco smoke and other sources, 229-230
preferential hiring of nonsmokers as most restrictive smoking policy, 301-302
research recommendations on effect of smoking regulations, 321
safety as motivation for early regulations against smoking, 287
smoking policies, survey data 1977-1986 (table), 288-293
smoking restrictions, conclusions of 1986 report, 324
State laws regulating smoking, comprehensiveness index, 327-328
INDEX

WORKPLACE—Contd.
surveys of smoking policies, 287, 294-295
tobacco smoke contribution to air pollution (table), 233
total suspended particulates (table), 194-196

WORKPLACE SMOKING
(See also ENVIRONMENTAL TOBACCO SMOKE; INVOLUNTARY SMOKING)
bans, usually preceded by progressively stricter regulations, 300-301
business type as factor in compliance with local smoking ordinances, 317
cessation programs as part of private sector smoking control, 297
control by restricting where smoking is allowed, variations, 299-300
ETS exposure determination, factor, 142
eye irritation reported in nonsmokers, 233
government offices, smoking regulation increasing, 285
guides on how to adopt and implement smoking policies, 302
hospitals, awareness and compliance of employees, 308-310
hospitals, review of current evidence on impact of smoking regulations, 308-309
impact of public and workplace restrictions, 303-321

WORKPLACE SMOKING—Contd.
“individual solution” approach to regulation, 298
legislated restriction, early controversy, 286
lung cancer risk factor in nonsmokers, 91-92
lung function effects of exposure in nonsmokers, 60
motivation for regulation, 295-296
nature, scope, and prevalence of regulation in the 1980s, 294-295
policy implementation effect on smokers, 312-313
private sector regulation, legislation and public support as factors, 295
private sector, State and local legislation, 285
regulation, impact on absenteeism, health care costs, productivity, turnover, 315-316
regulations, current status, 285-303
regulations supported by smokers and nonsmokers, 285
regulations, workforce size, geographic location, type of industry as factors, 295
restrictions, 16
restrictions, voluntary vs. governmental, 12
schools, restrictions to reduce faculty/staff exposure to ETS, 282
State regulation, public vs. private sector, 270
State regulations (table), 271-274
urinary cotinine levels as marker of exposure in nonsmokers, 207