

II. Penetrating Ionizing Radiation.....	239
A. Types of Exposure and Injuries.....	239
1. Latent Period.....	239
2. Tolerance Dose.....	240
3. Methods of Measuring Exposure.....	241
4. Blood Counts as Index of Injury.....	244
B. Protection from Gamma Rays.....	245
1. Pre-employment Examination.....	245
2. Protection of Personnel.....	245
3. Storage of Radium.....	246
4. Manipulation.....	247
5. Exposure Table for Gamma Rays.....	248
6. Protection of Messengers.....	249
7. Transportation by Common Carrier.....	249
C. Protection from X-Rays.....	250
1. Special Features.....	250
2. Protection from Electric Shock.....	251
3. Shielding Materials for Protection against X-Rays.....	252
4. Shield of the X-Ray Tube.....	253
5. Screening Complete Rooms.....	253
6. Ventilation.....	254
7. Special Conditions.....	254
8. Unnecessary Hazards.....	254
III. Infrared and Ultraviolet Radiation.....	255
A. Infrared.....	255
1. General Effect.....	255
2. Protective Measures.....	255
B. Ultraviolet.....	255
1. General Effect.....	255
2. Protective Measures.....	256
3. Tolerance.....	257
IV. Corpuscular Radiation.....	257
Neutrons.....	257
1. Types and Effects.....	257
2. Measurement.....	258
3. Shielding.....	259
Poisoning from Radium or Thorium.....	259
A. Radium Poisoning.....	259
1. Historical Summary.....	259
2. Radioactive Nature of Radium.....	261
3. Injuries and Symptoms in Radium Poisoning.....	263
4. Tolerances.....	264
5. Detection of Unsafe Conditions.....	265
6. Protective Rules for Radium Dial Painting.....	269
B. Thorium Poisoning.....	272
1. Industrial Use of Thorium.....	272
2. Tolerances.....	273
3. Methods for Measurement of Thoron.....	273
4. Protective Rules for Handling Thorium.....	274
X. Ventilation. By W. N. WITHERIDGE.....	275
I. Human Ventilation Requirements.....	276
A. Air Composition.....	276

B. Carbon Dioxide as an Index of Ventilation Requirements.....	277
C. Effect of Room Size on Per Capita Ventilation Requirements.....	278
D. Mines, Tunnels, and Underground Spaces.....	279
II. General Industrial Ventilation.....	280
A. Classification of General Industrial Ventilation.....	280
1. Natural General Ventilation.....	280
2. Mechanical General Ventilation.....	281
B. General Ventilation Specifications.....	281
1. General Ventilation Rates in Terms of Air Changes.....	281
2. General Ventilation Rates Based on Floor Area.....	282
3. Dilution Ventilation (General and Local).....	283
4. General Ventilation for Control of Solvent Vapors.....	284
5. Vapor Equivalents of Liquid or Solvents.....	285
C. Dispersion of Air Contaminants by General Ventilation.....	286
D. Provisions for Make-Up Air.....	286
1. Airbound Rooms and Buildings.....	287
2. Estimating Infiltration by the "Crack Method".....	288
3. Cost of Heating Make-Up Air.....	288
4. Heat Loss Analysis.....	290
5. The Degree-Day.....	291
6. Heat Loss Analysis Using Degree-Day Data.....	291
7. Heating Values of Various Fuels.....	291
E. Air-Supply Inlets and Exhaust Outlets.....	292
1. Air Inlets.....	292
2. Air Outlets.....	292
F. Short-Circuiting the Air Flow.....	293
G. Successive Ventilation.....	293
H. General Ventilation vs. Local Exhaust Ventilation.....	294
III. Industrial Process Ventilation.....	294
A. Industrial Process Enclosures.....	295
1. Paint-Spraying Rooms or Booths.....	295
2. Welding Booths or Rooms.....	295
3. Abrasive-Blasting Rooms.....	296
4. Metalizing or Metal-Spraying Rooms.....	296
5. Grinding Booths.....	297
B. Local Exhaust Ventilation.....	297
1. Exhausting vs. Blowing.....	299
2. Dalla Valle's Equation for Unobstructed Hoods.....	299
3. Flanges and Baffles Increase the Range of Exhaust Hoods.....	300
4. Air Velocities for Control of Air Contaminants.....	301
5. Specific Gravity of Gases and Vapors.....	303
6. Canopy Hood Ventilation.....	303
7. Sidedraft or Backdraft Hoods.....	304
8. Downdraft Hoods.....	306
9. Face Velocity.....	306
10. Slot Exhaust Ventilation for Tank Processes.....	306
11. Tailpipe Exhaust Systems for Internal-Combustion Engines.....	308
12. Special or Irregular-Shaped Hoods.....	310
C. Ventilation in the Munitions Industry.....	314
IV. Air-Cleaning Methods and Equipment.....	314
A. Selection and Performance of Air Cleaners.....	314
B. Types of Air Cleaners.....	316