

Handbook on Effects of A-Bomb Radiation

CONTENTS

| | | | | | |
|------------|--|----|--|--|----|
| 1 | Physical damage from the atomic bombings | 1 | (h) Ovarian cancer | 25 | |
| | Summary | 1 | (i) Urinary organ cancers | 25 | |
| | 1 Detonations | 1 | (j) Brain and central nervous system tumors | 25 | |
| | 2 Energy | 1 | (k) Thyroid cancer | 26 | |
| | A Blast | 2 | (l) Multiple myeloma | 27 | |
| | B Thermal rays | 2 | (m) Leukemia, myelodysplastic syndrome | 27 | |
| | C Radiation | 2 | (n) Malignant lymphoma | 28 | |
| | (1) Initial radiation | 2 | B Non-cancer diseases and abnormalities | 29 | |
| | (2) Residual radiation | 2 | (1) Thyroid diseases | 29 | |
| 2 | Effects on human body | 7 | (a) Benign tumors | 29 | |
| A | Early deaths and injuries in the immediate aftermath | 7 | (b) Functional disorders | 29 | |
| B | Late effects | 8 | (2) Parathyroid diseases (dysfunctions) | 29 | |
| I | Study participants and programs | 8 | (3) Ocular diseases | 30 | |
| II | Dosimetry | 9 | (4) Circulatory diseases | 30 | |
| | 1 Physical dose measurement | 9 | (5) Liver diseases | 31 | |
| | A Dosimetry system 2002 (DS02) | 9 | (6) Gynecologic disorders | 31 | |
| | B Residual radiation | 10 | (7) Skin diseases | 32 | |
| | 2 Biological dose estimation | 11 | (8) Bone, musculoskeletal diseases | 32 | |
| | A Chromosomal aberrations | 11 | (9) Psychological effects | 32 | |
| | B Electron spin resonance (ESR) using tooth enamel | 11 | (10) Growth and developmental diseases | 33 | |
| III | Types of late effects - Findings from the field of epidemiology | 13 | (11) Effects on aging and lifespan | 33 | |
| | 1 A-bomb survivors | 13 | C Immune system abnormality, inflammation | 35 | |
| | A Malignant tumors | 13 | 2 Survivors exposed in utero | 36 | |
| | (1) All types of leukemia and solid cancers | 13 | A Microcephaly and intellectual disability | 36 | |
| | Summary | 13 | B Growth and developmental disorders | 37 | |
| | (a) Introduction | 13 | C Malignant tumors | 37 | |
| | (b) Cancer development risk | 15 | D Non-cancer diseases and abnormalities | 38 | |
| | 1) All leukemia risk | 15 | 3 Second-generation Survivors (Genetic Effects) | 39 | |
| | 2) Solid cancer risk | 16 | A Birth disorders (stillbirth, malformation, neonatal mortality) | 39 | |
| | ① Site-specific risk | 16 | B Sex ratio | 39 | |
| | ② Risk modifiers | 17 | C Chromosomal aberrations | 39 | |
| | ③ Dose-response relationship | 20 | D Studies of protein-level genetic effects, and later DNA studies | 40 | |
| | ④ Attributable fraction | 21 | E Mortality rate | 40 | |
| | (2) Cancer risk by site | 22 | F Cancer incidence | 40 | |
| | (a) Esophageal cancer | 22 | G Multifactorial disease prevalence | 41 | |
| | (b) Gastric cancer | 22 | | | |
| | (c) Colon cancer | 22 | 3 | Utilization by international organization of results from A-bomb radiation effects studies in radiation health-risk assessment and protection-standards establishment | 42 |
| | (d) Liver cancer | 23 | Glossary | 43 | |
| | (e) Lung cancer | 23 | | | |
| | (f) Skin cancer | 24 | | | |
| | (g) Breast Cancer | 24 | | | |