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Nuclear Threat Reexamined

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Nuclear Hazard

Nuclear weapon attack

- During the blast
 - Initial radiation (external exposure)
 - Intense light, heat and pressure wave
 - Electromagnetic pulse
- After the blast
 - Radioactive substance (external and internal exposure)

S. Glasstone and P. J. Dolan (1977).

Nuclear war

- A minor nuclear war
 - Climatic effects
 - Global ozone hole
- A full-scale nuclear war
 - Nuclear winter
 - Threaten humanity

A. Robock, L. Oman, and G. L. Stenchikov (2007)

Victims of Nuclear Blast

Hiroshima City



Atomic Bomb Dome

We can observe some horrific reminders of A-bombing at 1945.

Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital



Hiroshima City



Hiroshima city

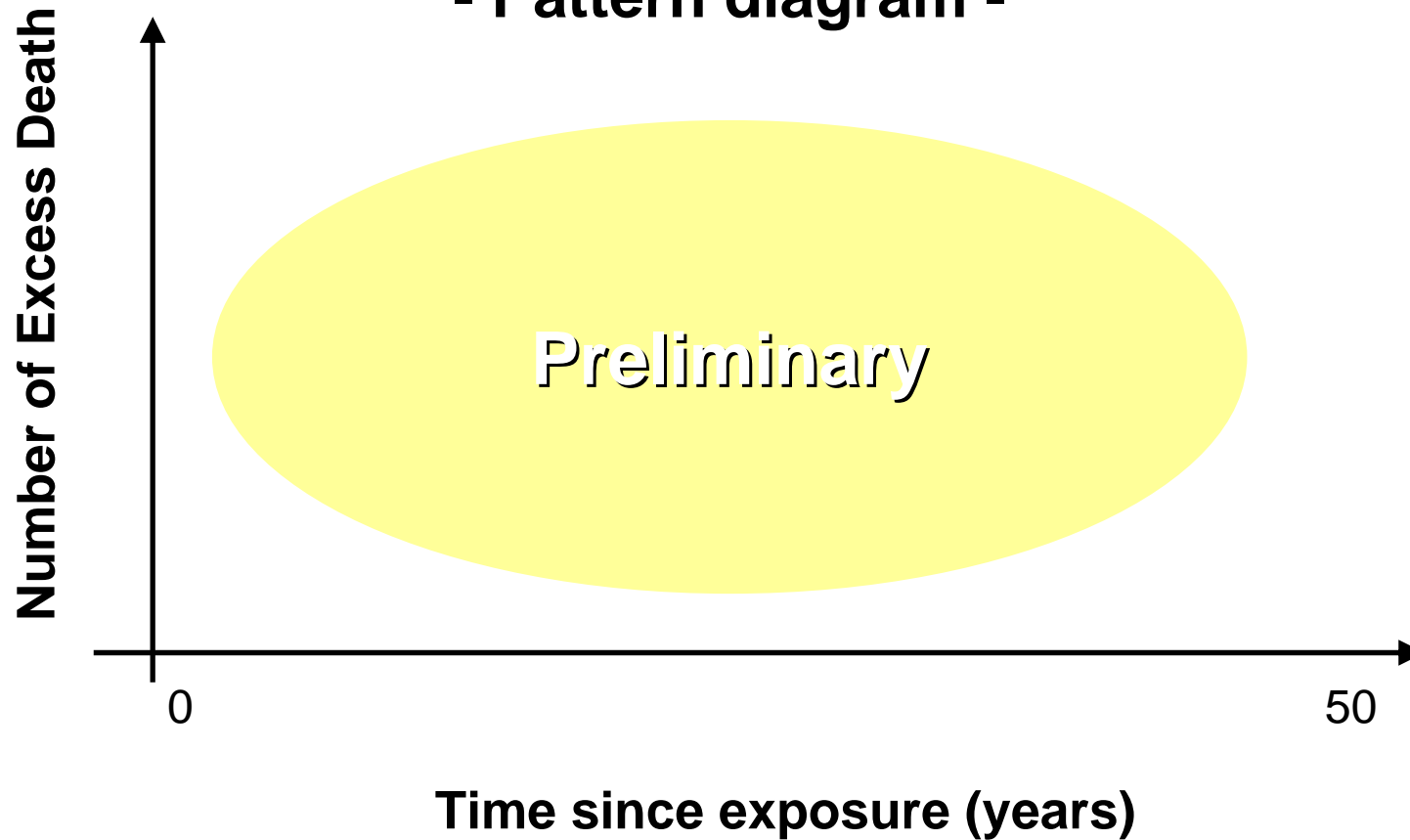
A dose from radioactive substance is below the background radiation now.



Miyajima island

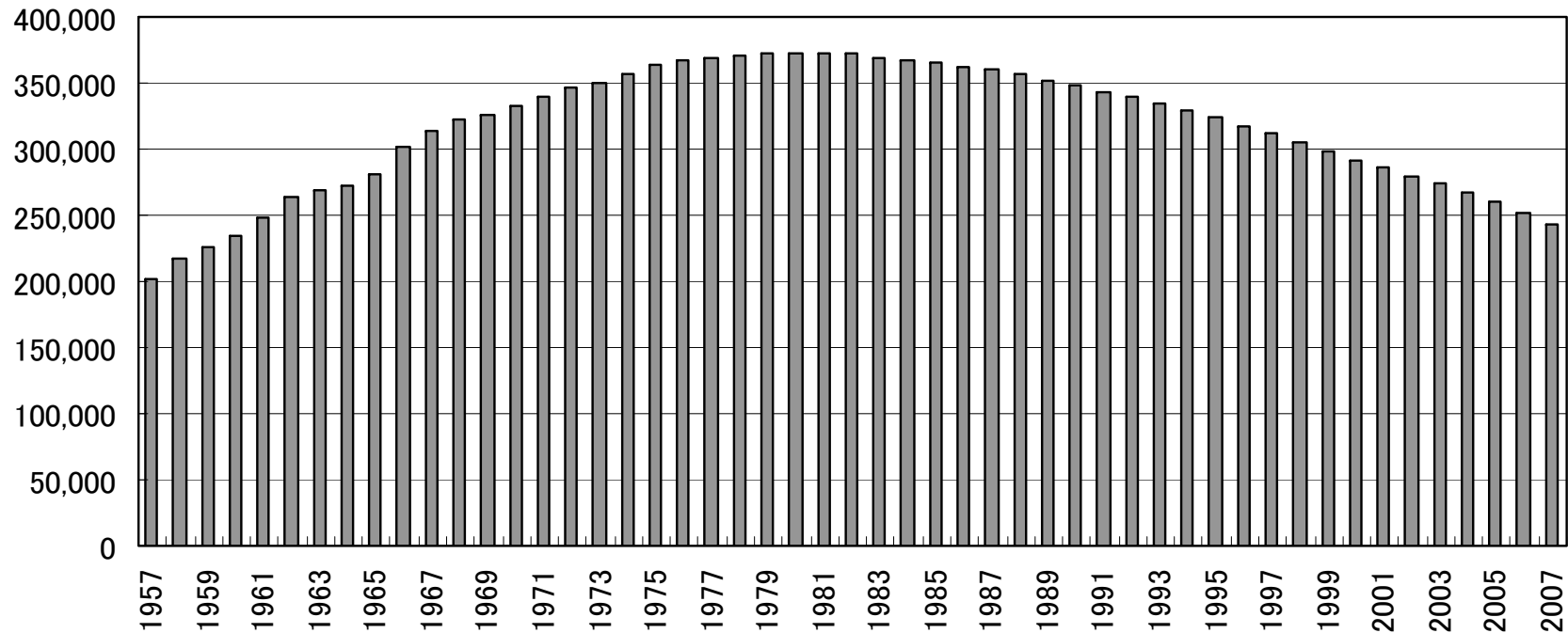
Radiation-Associated Deaths

Changes of the number of A-bomb radiation-related deaths
- Pattern diagram -



Radiation Effects Research Foundation, Hiroshima (2007)

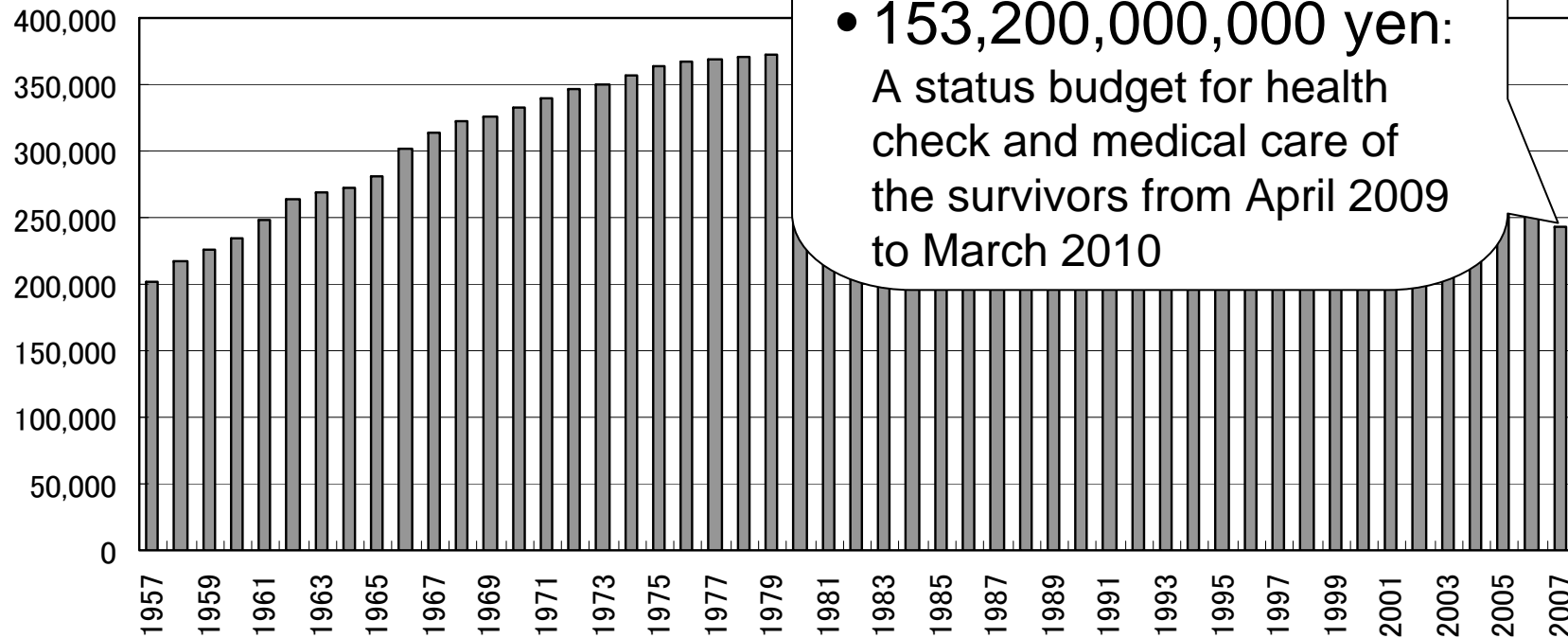
Atomic Bomb Survivors



The amount of issue of Atomic Bomb Survivor's Certificates from 1957 to 2007

Ministry of Health, Labour and Welfare, Japan

Atomic Bomb Survivors

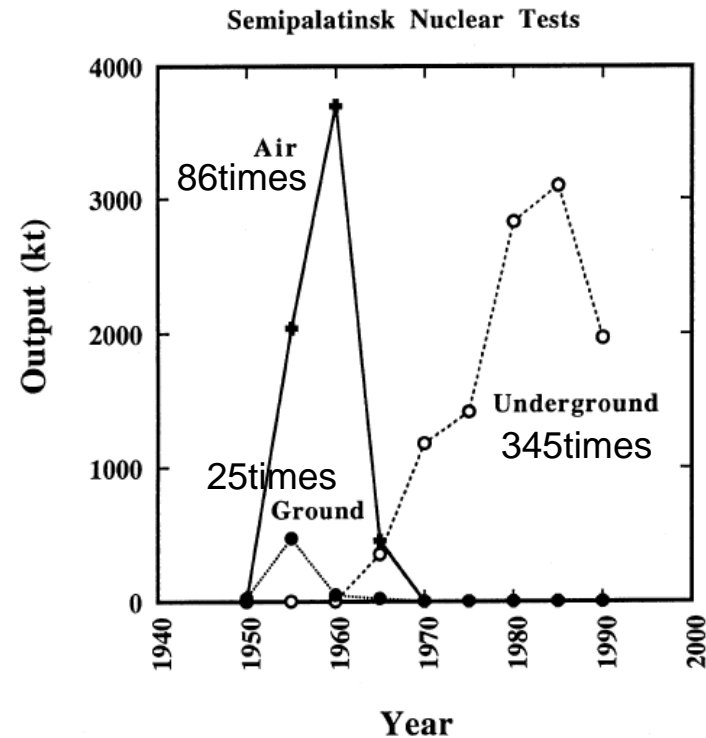


- 243,692: the number of the survivors at March 2008
- 153,200,000,000 yen: A status budget for health check and medical care of the survivors from April 2009 to March 2010

The amount of issue of Atomic Bomb Survivor's Certificates from 1957 to 2007

Other Victims

- Nuclear test site
(Marshall Islands, Semipalatinsk,...)
 - Fallout from surface detonations contaminate the ground surface for a long time.
 - People received doses from external and internal exposure.



USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions 1949 through 1990, Russian Federal Nuclear Center- VNIIEF, 1996.

Grosche 2002

Other Victims

- **Nuclear test site**
(Marshall Islands, Semipalatinsk,...)
 - Fallout from surface detonations contaminate the ground surface for a long time.
 - People received doses from external and internal exposure.

Ex. In Kazakhstan, 1.6 million people were subjected to radiation as a result of the nuclear explosions that were conducted.

Speech at UN, October 1998

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Year

USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions
1949 through 1990, Russian Federal Nuclear Center- VNIIEF,
1996.

Grosche 2002

Concluding Remarks

Effect of nuclear weapons

- Short term effect
 - Physical and health effect by initial radiation, pressure wave and heat ray, Break down of information and traffic network, Spread the radioactive fall out, Stop the city administration and economic activities, International economic activities
- Long term effect
 - Radioactive substance, Aftereffects of radiation, Mental and social damage, Climate change, Ozone hole, Nuclear winter, Cultural

Revolutionary change in Japan

The Democratic Party of Japan (new Government party)

Opposes any use of nuclear weapons which disregards Japan's wishes. "No first use" is something that should be discussed with the US.

Liberal Democratic Party of Japan (previous one)

Willing to discuss the role of the nuclear umbrella with the US. Opposes a "no first use" policy.

A questionnaire survey by ICNND Japan NGO Network before elections (2009)

References

- S. Glasstone and P. J. Dolan, ed., “The Effects of Nuclear Weapons” (3rd ed.), Washington, D.C., U.S. Government Printing Office (1977).
- A. Robock, L. Oman, and G. L. Stenchikov, “Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences”, J. Geophys. Res., 112 (2007) D13107.
- Special committee under the civilian protection council in Hiroshima city, “Report for a Predicted Damage of Nuclear Bomb,” (in Japanese) (2007).
- W. C. Bell and C. E. Dallas, “Vulnerability of populations and the urban health care systems to nuclear weapon attack – examples from four American cities”, International Journal of Health Geographics, 6:5 (2007).
- M. E. Hellman, “Risk Analysis of Nuclear Deterrence,” The BENT of TAU BETA PI (2008) 14-22.
- Ministry of Health, Labour and Welfare, “Support of Atomic Bomb Survivors,” <http://www.mhlw.go.jp/bunya/kenkou/genbaku.html>
- “Introduction to the Radiation Effects Research Foundation, Fifth revision,” Radiation Effects Research Foundation, Hiroshima (2007)
- B. Grosche, Semipalatinsk test site: Introduction, Radiation and Environmental Biophysics 41 (2002) 53-55.
- H. E. Arystanbekova and Kh. Akmaral, (Kazakh Ambassador to the United Nations) (1998) Speech made at United Nations, 19 October 1998, http://www.un.int/kazakhstan/sa_10198.htm
- ICNND Japan NGO Network, <http://icnndngoJapan.wordpress.com/>