

ANNEX A.

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BACKGROUND STATEMENT WITH RESPECT TO
FALLOUT

The severe fallout of radioactive contamination from ground bursts of very high-yield nuclear weapons is being erroneously considered as likely to occur after an atomic detonation of any size. Such is not the case.

There are four basic effects from any nuclear explosion: blast, heat, immediate nuclear radiation, and residual radioactivity or fallout. It should be understood that the extent of all four of these effects has a definite relation to the energy yield of the explosion. Large explosions have large effects, and small explosions have correspondingly smaller effects. The scaling factors set forth in the unclassified "The Effects of Atomic Weapons" give an indication of these variations.

The fallout patterns associated with the 1954 Bikini test were the result of the detonation on the ground of a device with a yield in the range of millions of tons of TNT equivalent. The fallout was the product of both the very large explosive power and the contact of the fireball with the earth. A 20 kiloton nuclear bomb detonated on the island surface would have produced only a small fraction of the fallout. Had the multi-megaton device been detonated high in the air, the fallout would have been drastically reduced. From these considerations we may derive the following conclusions:

1. A nuclear weapon will cause a fallout hazard if it is exploded at or near the surface of the earth. For weapons of low kiloton yields, the affected areas are small. The hazard increases with the size of the weapon and becomes a serious problem with weapons in the megaton range.

2. A nuclear weapon, when exploded at an altitude which prevents the fireball from touching the surface of the earth, will create at most only a very small fallout problem.

These conclusions are not stated in an attempt to minimize the hazard of fallout, but rather for the purpose of clarifying and emphasizing the conditions under which this hazard may occur.

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