

Appendix B

Summary Review of Selected Cut-off Article References 1980-1993

- 1980:** Epstein W. "A Ban on the Production of Fissionable Material from Weapons", *Scientific American*, Vol.243, p.43.

Epstein discusses the benefit of banning the production of fissionable material for nuclear weapons, in addition to the prospects of a CTB under discussion at this time of writing. Cut-off of NWS as well as prohibition in NNWS is implied. Proposal was intended to halt vertical spread of numbers of weapons (at that time, increase in the number of and the type of nuclear weapons in the NWS) and the horizontal spread of nuclear weapons to NNWS. An additional reason for cut-off identifies the HEU weapon stockpile. This could provide a source of LEU for power reactors and postpone the need for commercial breeder reactors and the plutonium economy. The reduction of weapons proliferation, likely with breeders and Pu recycling is also identified. The article provides a brief historical review of cut-off with various proposals being linked to the political changes in the period from 1946 to 1979. The latter is extensive and informative. Little discussion is provided on verification issues, or on the specific types of facilities involved.

- 1983** Krass A.S., Boskma P., Elzen B. and Smit W. A., "Uranium Enrichment and Nuclear Proliferation", International Publications Service, Taylor & Francis Inc., New York.

Although now somewhat dated, this book provides an excellent review of the state of the art of uranium enrichment techniques existing at that time, which should be easily understood by the non-technical specialist. A qualitative risk ranking of proliferation, using the U-235 route, of the various enrichment techniques is provided. The risk ranking is based on technical features of the techniques for an overall generic-risk basis and also a state-specific-risk basis, based on the known technology status at that time. The technical methods are also placed in the context of the economic and institutional environment within which the enrichment industry has evolved. Measures which might be taken to reduce the proliferation risk from the industry are discussed.

- 1986:** von Hippel F., Levi B.G. "Controlling Nuclear Weapons at the Source: Verification of a Cut-off in the Production of Plutonium and Highly Enriched Uranium for Nuclear Weapons", *Arms Control Verification*, Pergamon-Brassey's.

A very clearly written and extensive review article containing much of the material on the same subject published by von Hippel in other articles around this time [Bib. articles 24, 25, and 28]. The article addresses cut-off history very briefly. A discussion is provided of the status of U-235 and Pu-239 production and estimated US stockpiles at the time of writing and of verification aspects of a cut-off of the production of fissionable material, with specific regard to the potential role of the IAEA. Verification for specific declared production facilities is discussed.