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SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS OF NUCLEAR TESTING IN INDIA

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Test data

All of India's nuclear tests – one explosion in 1974 and five explosions on 11 and 13 May 1998 – were conducted underground at the Pokhran test site in the western state of Rajasthan. The 18 May 1974 test was officially a 'peaceful nuclear explosion'. While it was not a deliverable device, it was clearly part of India's nuclear weapons development. Raja Ramanna, a scientific leader of the preparation for that test, was explicit about that in his memoir: he wrote about the 1974 test that he had "been involved in the development of a prototype weapons" (as quoted in M.V. Ramana, "La Trahison des Clercs", in M.V. Ramana and C. Rammanohar Reddy, eds., *Prisoners of the Nuclear Dream*. New Delhi, India: Orient Longman, 2003, pp. 233-234). The device contained five to seven kilograms of plutonium; independent estimates of yield are generally lower than the official figure of 12 kilotons (M.V. Ramana, *The Power of Promise*. New Delhi: Penguin Books India, 2012, p. 28)

Three explosions were conducted at the same time on 11 May 1998 and two at the same time on May 13; the latter were experimental devices with yields less than one kiloton. The three 11 May 1998 explosions included a 45 kiloton thermonuclear weapon, a 12 kiloton fission weapon and an experimental 0.2 kiloton device, according to official yield estimates ([Department of Atomic Energy 2009](#)).

The tests were reportedly conducted at 200 to 300 meters depth (M.V. Ramana and Surendra Gadekar, "The Price We Pay", in M.V. Ramana and C. Rammanohar Reddy, eds., *Prisoners of the Nuclear Dream*. New Delhi, India: Orient Longman, 2003, p. 438).

Radioactivity dispersal and underground pollution

The official position of the Government of India is that there was no venting from the tests – and thus no atmospheric releases of radioactivity. No independent confirmation of this statement is available. As a result, the health complaints of people in nearby villages cannot be linked to the test (M.V. Ramana and Surendra Gadekar, "The Price We Pay", in M.V. Ramana and C. Rammanohar Reddy, eds., *Prisoners of the Nuclear Dream*. New Delhi, India: Orient Longman, 2003, p. 438). The Department of Atomic Energy has acknowledged that the 1998 tests were just 5 kilometers from a nearby village, Khetolai ([Department of Atomic Energy 2009](#)).

Fission products and residual unfissioned plutonium from the tests remain underground. About 140 terabecquerels of strontium-90, 230 TBq of cesium-137, and 33 TBq of plutonium-239 (about 14 kilograms) remain underground as of 2020 (values for Sr-90 and Cs-137 are decay-corrected values, based on M.V. Ramana and Surendra Gadekar, "The Price We Pay", in M.V. Ramana and C. Rammanohar Reddy, eds., *Prisoners of the Nuclear Dream*. New Delhi, India: Orient Longman, 2003, p. 439), posing a long-term threat to the underground environment.

References

Department of Atomic Energy 2009	Department of Atomic Energy, "Press Statement by Dr. Anil Kakodkar and Dr. R. Chidambaram on Pokhran-II tests", Government of India, 24 September 2009, at https://pib.gov.in/newsite/PrintRelease.aspx?relid=52814
Ramana 2012	M.V. Ramana, <i>The Power of Promise</i> . New Delhi: Penguin Books India, 2012.
Ramana 2003	M.V. Ramana, "La Trahison des Clercs", in M.V. Ramana and C. Rammanohar Reddy, eds., <i>Prisoners of the Nuclear Dream</i> . New Delhi, India: Orient Longman, 2003.
Ramana and Gadekar 2003	M.V. Ramana and Surendra Gadekar, "The Price We Pay", in M.V. Ramana and C. Rammanohar Reddy, eds., <i>Prisoners of the Nuclear Dream</i> . New Delhi, India: Orient Longman, 2003.