Low-level radioactive contamination will persist for decades

- Short-lived radioiodines were the greatest radiological concern during the first few weeks after the accident. But almost 30,000 square kilometers in Belarus, Russia and the Ukraine were also contaminated with relatively high levels of Caesium 137 (in excess of 185 kBq per square meter), a nuclide with a half-life of some 30 years.

- Radioactive caesium was deposited on the ground, including in agricultural and forested areas. Thus, initially many crops and forest products were heavily contaminated. Subsequently, as radiocaesium was absorbed into the soil and the roots of plants, low levels of contamination could still be found in new crops.

- Drinking water supplies from some rivers and reservoirs near the plant were contaminated with caesium and strontium radionuclides during the month immediately following the accident, but levels fell rapidly. Regular monitoring since 1986 shows that there has been a steady decline in the radionuclide contents in these water bodies. Bottom deposits and banks of the Pripyat and Dnieper Rivers contain caesium, strontium, plutonium and other radioactive elements. During spring flooding, concentrations of radioactive

Collecting sediment samples at Savachi, Belarus for IAEA laboratory analysis
credit: Mouchkin/IAEA

materials increase by up to four times in these rivers, whose main drainage basins are in the most contaminated areas. Current contamination levels in reservoirs are well below the criteria that indicate degraded water quality.

- Forest occupies 30-40 percent of the most contaminated area, and has played the role of filter in intercepting the fallout. Up to 90 percent of the fallout is concentrated in leaf litter. Caesium continues to be concentrated in wood, but concentrations in disbarked wood from most territories affected by the Chernobyl accident do not exceed admissible levels. Wood from the exclusion zone may require special treatment to meet these levels, and may for decades to come.

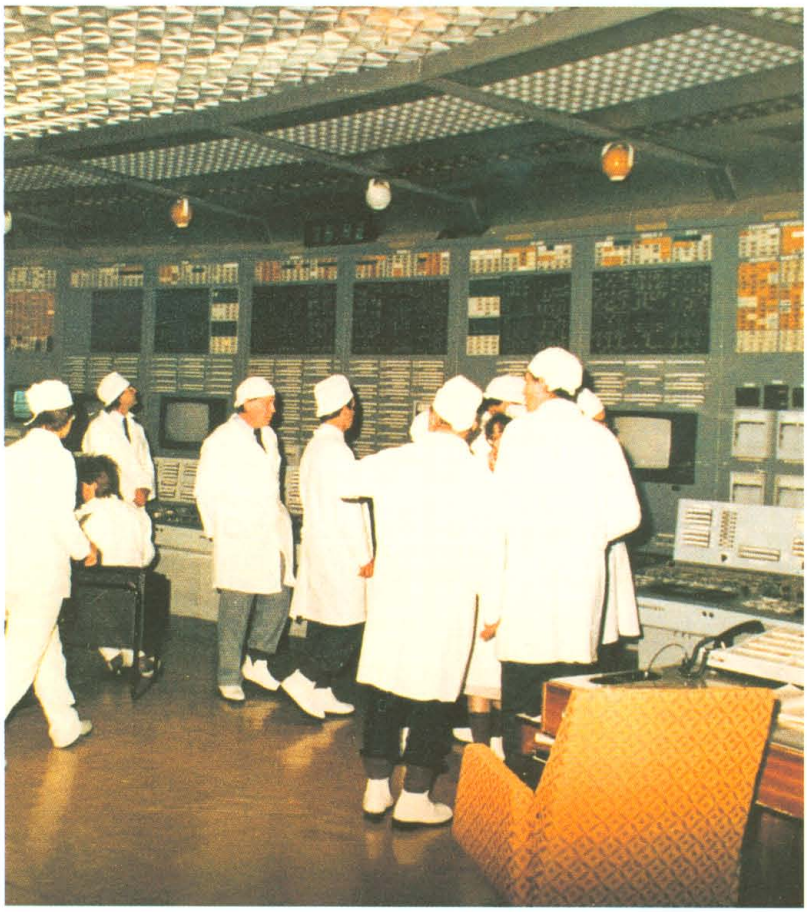
- Game animals that graze in natural zones, and wild foods consumed by people, such as berries and mushrooms, continue to show elevated caesium levels that may surpass nationally adopted standards in the affected Republics. This is also the case in parts of the Nordic countries and the United Kingdom.

Poplar trees within the exclusion zone credit:Eric Voice

Chernobyl-type reactors have been upgraded for safety

- After 10 years of detailed analysis by Belarussian, Russian, Ukrainian and international experts, the principal causes of the Chernobyl accident are well understood. The accident occurred because of severe deficiencies in the design of the reactor compounded by the violation of operating procedures.

- The lack of a "safety culture" in the responsible organizations of the former Soviet Union resulted in an inability to remedy such design weaknesses, even though they had been known before the accident.



An IAEA expert team inspects the control room of the Ignalina nuclear power plant in Lithuania

- The most serious deficiencies in other operating RBMK reactors are being addressed through safety upgrades. Between 1987 and 1991, a first stage of upgrading was performed on all RBMK units to eliminate the design deficiencies which contributed to the Chernobyl accident, to improve shutdown mechanisms and heighten general safety awareness among staff. There are plans for further safety improvements.

- The "sarcophagus" that was constructed over the destroyed reactor has met the protection objective over the past 10 years. In the long term, however, its stability and the quality of its confinement are in doubt. A collapse of the structure could lead to a release of radioactive dust and radiation exposure to workers at the site, but widespread effects would not be expected.

Units 1,2,3 and 4 of Chernobyl nuclear plower plant. The Sarcophagus over Unit 4 is in the foreground credit:Mouchkin/IAEA