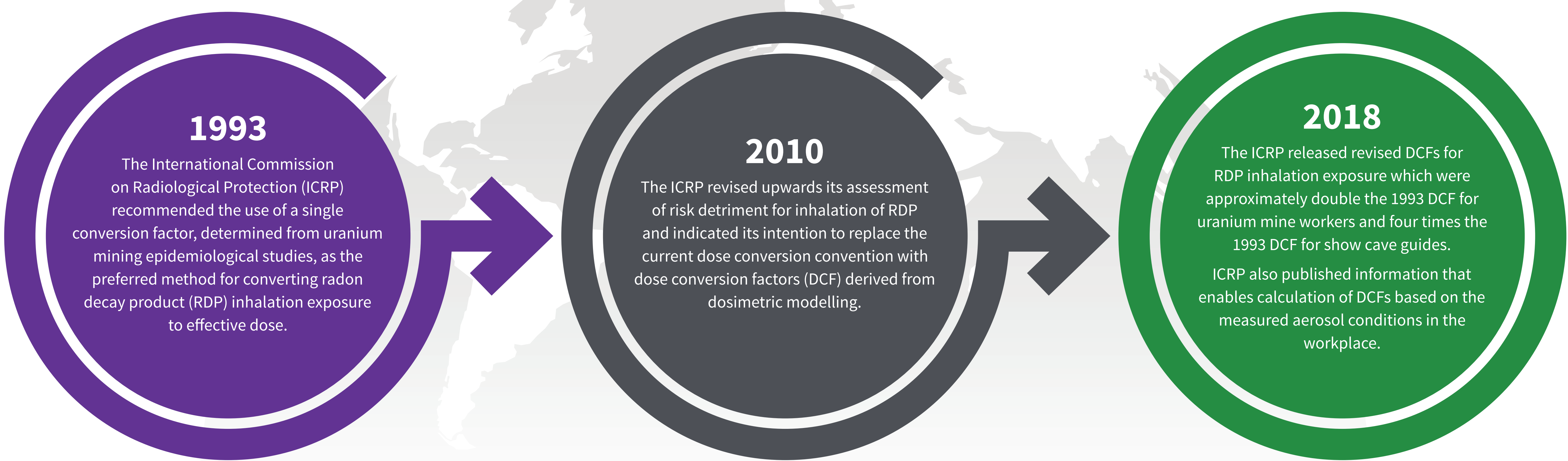




Effect of New ICRP Dose Coefficients on Workplace Exposures

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ICRP changes



ARPANSA measurements

Uranium mine workers

In December 2013, ARPANSA undertook a limited set of measurements of the airborne RDP activity size distributions and other associated parameters at the BHP Olympic Dam Uranium Mine at Roxby Downs, South Australia.

This data was used to derive site-specific dose conversion factors at six representative sites within the mine.

ARPANSA/TR 179, May 2018, arpansa.gov.au/research-and-expertise/technical-reports

Show cave guides

Over the period March 1996 – October 1998, ARPANSA undertook an investigation of radon, radon progeny and aerosol related parameters in all show caves in Australia with radon levels exceeding 1000 Bq m⁻³.

These data have been re-analysed to derive site-specific dose conversion factors for cave guides working in these caves.

Radiation Protection Dosimetry (2019), pp. 1–4

Dose conversion factor for radon decay products

	1993 convention (mSv/Jhm ⁻³)	2018 recommendations (mSv/Jhm ⁻³)	2018 site specific (mSv/Jhm ⁻³)
Mine worker	1425	3000	3880–4960
Cave guide	1425	6000	5670–13270

Impacts of new dose coefficients

Mine workers

Australian regulators have agreed to the use of the 2018 ICRP recommendations for the purposes of optimising dose due radon exposure in mines.

Records from the Australian National Radiation Dose Register show that the doses received by uranium mine workers have a maximum value of about 7 mSv y⁻¹ and average about 1 mSv y⁻¹, using the 1993 convention DCF.

These results indicate that applying the 2018 DCF will **not lead to Australian uranium mine worker doses exceeding the 20 mSv y⁻¹ dose limit.**

Australia will investigate the exposure of other underground mine workers to radon.

Show cave guides

In the original 1996 Australian cave survey, the doses to the guides from exposure to radon in show caves were assessed to be less than 10 mSv y⁻¹.

Using site-specific DCF values the assessed doses may be **more than six times higher than earlier estimates and may exceed 20 mSv y⁻¹.**

Although the total number of show cave guides in Australia is very small, the updated radon progeny dose estimates are a significant radiation protection and health issue for the affected individuals.