

SUPERVISING SCIENTIST'S OVERVIEW

The Supervising Scientist is responsible for the supervision, monitoring and audit of uranium mines in the Alligator Rivers Region as well as research into the possible impact of uranium mining on the environment of the region.

Energy Resources of Australia (ERA) operates the only active uranium mine in the region, the Ranger mine, and currently operates the Jabiluka project on a care and maintenance basis. The Nabarlek mine was decommissioned in 1995 and the adequacy of the rehabilitation of this site is under ongoing assessment.

Two significant incidents occurred at the Ranger mine during 2003–04. The first involved the contamination of the potable water supply at the mine with process water. The second related to vehicles leaving the Ranger site without adequate radiation clearance. I have investigated both incidents and will present reports on the incidents to the Minister for the Environment and Heritage early in 2004–2005.

The investigation of the potable water incident identified the primary cause of the incident as being human error in the connection of a flexible hose between the potable and process water systems and the subsequent opening of valves in the connecting line. The primary conditions that allowed the incident to occur have been identified as well as a major underlying cause, namely the poor condition of the process water distribution system at Ranger. My report will identify a number of actions that need to be implemented by ERA and the Northern Territory Government to ensure that this type of incident cannot recur.

A number of workers who were exposed to the contaminated water, either through drinking or showering, reported adverse short-term effects. These included gastrointestinal distress and skin irritation. However, the major concern arising from the incident was the potential for long-term impact on the health of workers who drank the contaminated water. Based on the assessment provided to me by a group of independent experts in human health risk assessment, I have been able to conclude that such long-term health effects are most unlikely. Nevertheless, such effects cannot be completely ruled out and I will, therefore, recommend that a voluntary health monitoring programme be implemented by ERA for affected workers.

The incident caused contaminated water to move towards the businesses in Jabiru East near the Ranger mine and also discharged from a holding tank at Jabiru East towards the Magela Creek. I am pleased to report, however, that water consumed by members of the public at Jabiru East satisfied the Australian Drinking Water Guidelines. In addition, the results obtained in an extensive environmental monitoring and assessment programme enabled me to conclude that the incident should not have had adverse effects on the ecosystems of Kakadu National Park or on the health of people living downstream from the mine who consume foods collected from local water bodies.

I have advised the Commonwealth Minister for Industry, Tourism and Resources that, in my view, ERA has, as a result of this incident, been in breach of the Commonwealth's Environmental Requirements for the Ranger mine. The Minister will consider whether action should be taken by the Commonwealth in the light of these breaches when my report is finalised.

In my investigation of vehicles leaving the Ranger mine, it has been established that vehicles left the mine on at least three occasions during 2003 and 2004 without adequate radiation clearance procedures being undertaken. One of these incidents resulted in the deposition of a relatively large quantity of partially leached uranium ore at a workplace in the township of Jabiru. This resulted in the exposure of members of the public to low levels of radiation over a period of several months.

Estimates have been made of the radiation dose to these members of the public. It has been concluded that the radiation dose received was about equal to the annual radiation dose limit for members of the public. While this is a serious issue from a regulatory perspective, it needs to be stressed that a radiation dose of this magnitude does not represent a significant health risk. The individuals concerned have been counselled.

I have concluded that ERA has, in failing to have adequate procedures in place to avoid incidents of this kind, been in breach of the Commonwealth's Environmental Requirements for the Ranger mine. In my report to the Minister, I will recommend that the Government should consider whether action should be taken by the Commonwealth in the light of these breaches.

The Supervising Scientist's independent environmental monitoring program at the Ranger mine continued throughout 2003–04. Compliance with the water quality limits and guidelines throughout the wet season downstream from Ranger provided reassurance that the aquatic environment has not suffered any deleterious effects from mining during the year and the results of the biological monitoring programme confirm this. Detailed measurements during the period of the potable water contamination incident demonstrated that these conclusions also applied to this incident.

In recent years, we have been developing quantitative risk assessment methods to assess monitoring data rather than simply comparing results to a limit or guideline. An assessment of uranium data downstream from Ranger in this context was completed during the year. The results show that, although there has been an increase in uranium concentrations downstream from the Ranger mine, we have a very high level of confidence (about 95%) that more than 99% of aquatic animal and plant species have been protected from possible adverse effects arising from exposure to uranium in downstream waters. I believe that being able to express results in this quantitative form will provide the public with greater reassurance on the effects of mining on the environment of Kakadu National Park and we will continue to develop these methods.

It was reported last year that the Jabiluka Minesite Technical Committee had concluded, in June 2003, that the system that constitutes Best Practicable Technology for the long-term water management system at Jabiluka would be a passive system resulting from relocation of the mineralised stockpile underground to the mine decline, transfer of residual water from the Jabiluka water storage pond to the decline, transfer of the schist component of the waste rock dump to the decline and subsequent sealing of the decline. These primary measures would be accompanied by removal of surface infrastructure at the site, provision of an overflow system for the water storage pond and stabilisation of the site surface through limited revegetation measures. Northern Territory Government approval for the civil works necessary for this transition to a period of long-term care and maintenance at Jabiluka was given on 28 July 2003 and the works were completed by 5 December 2003.

The Supervising Scientist's routine monitoring programme for the Jabiluka site during 2003–04 demonstrated that the quality of water entering Kakadu National Park from the site continued to be very good. For example, no change in uranium concentrations from historical values can be detected and maximum uranium concentrations remain lower than the recommended limit by more than a factor of 200. Similarly, the radiological and biological monitoring programmes did not detect any significant effect on people or ecosystems that could be attributed to operations at the Jabiluka site. Because of the site works carried out during the 2003 dry season, special attention was paid to the monitoring of sediment in surface waters downstream from the Jabiluka site. There was evidence of a very small increase in sediment downstream from the site but it was not significant.

Assessment of the adequacy of decommissioning and rehabilitation of the Nabarlek minesite continued throughout 2003–04. Research was commenced in August 2003 to develop cost-effective monitoring and assessment methods for revegetation and to provide a robust quantitative assessment of revegetation success based on comprehensive characterisation of soils and vegetation across the minesite. Results obtained in this project were presented to the Nabarlek Minesite Technical Committee. They will be used by the Committee to develop a final rehabilitation strategy for the site and to determine an appropriate value for the Nabarlek Rehabilitation Bond.

Research at the Nabarlek site has identified the existence of a small area, approximately 0.4 ha in area, that exhibits elevated levels of radioactivity and is devoid of vegetation. Results of this programme were presented to the Nabarlek Minesite Technical Committee and it was agreed that further work would be carried out to assess the soil profile in the area and to specify additional rehabilitation requirements. It is expected that this work will be completed during the 2004 dry season.

The Alligator Rivers Region Technical Committee met twice during 2003–04. A major outcome was the revision of, and agreement on, the Key Knowledge Needs for uranium mining in the Alligator Rivers Region. These Key Knowledge Needs are now being used by both SSD and ERA to specify and prioritise their respective environmental research programmes for the next 5–10 years.

Finally I would like to express my gratitude to the staff of the Supervising Scientist Division for their ongoing commitment to the protection of the people and the environment of the Alligator Rivers Region, including Kakadu National Park. This was especially so during the period of the investigation of the potable water contamination incident at the Ranger mine. Investigation of this incident demanded an intense cooperative programme of work by a large number of staff in the Office of the Supervising Scientist and the Environmental Research Institute of the Supervising Scientist. It has been through their efforts that I have been able to reach firm conclusions on the causes of the incident, on steps that need to be taken to avoid such incidents in future and on the extent to which people and the environment have been protected.

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