Dust monitoring at the Remote Indigenous Community of Pipalyatjara: A Rio Tinto and Centre for Appropriate Technology Fellowship.

The Community

Pipalyatjara is a small indigenous community located some 25km Southeast of the intersection of the WA, SA, and NT boarders. The community was established when elders moved back to the homelands, from church and government settlements, in 1971-1975. The community contains around 30 dwellings connected by dirt roads. The surrounding area is dominated by red earth, spinifex, red river gums, mulga and red granite outcrops. Today, some 2500 people live on the Anangu Pitjantjatjara lands which cover more than 103,000 square kilometres of arid land encompassing Pipalyatjara and other communities.

The Need

Eye health is a very important issue in Pipalyatjara and in the surrounding communities where the incidence of trachoma, especially in children, is a significant cause for concern. Trachoma can lead to increased adsorption of dust on/in eyes. This can be very painful and debilitating. The government has decided to seal the roads in the Pipalyatjara community to test its effect on eye health. It is hoped that sealing the roads will reduce the dust levels in the community and therefore lesson the incidence of poor eye health. Other benefits relating to reduced respirable and nuisance dust will hopefully also follow.

Rio Tinto's involvement

Rio Tinto has formed an alliance with the Centre for Appropriate Technology (CAT) in the hope of being able to provide technical help and expertise to indigenous communities. At the same time Rio Tinto employees will benefit from experiencing indigenous culture and will become aware of important issues that face such communities. CAT is an organization of around 60 people with offices in Alice Springs TN, Cairns QLD and Derby WA. It is funded by organizations such as ATSIC and was set up to:

- Research and evaluate new/emerging technology and training responses linked to technology,
- Design, Develop and Teach technologies appropriate to remote communities, Aboriginal and Torres Strait Islander resources and service delivery organizations, through the organization of technology development exchanges, publications, networks, ideas, strategies and options, and
- Sponsor projects and events, which raise the profile and involvement of women in technology.

In 1998 Rio Tinto and CAT established a fellowship program that gave Rio Tinto Staff the opportunity to undertake four projects in 1999. The project was one of the four. Others included waste disposal and sewerage treatment technologies.

The Project

The project was aimed at developing and implementing a dust monitoring system to quantify the effect of sealing roads on dust levels in the Pipalyatjara community. It parallels and provides input into a "Housing for Health" project which is currently looking to develop methodologies for assessing levels of wind borne dust, measuring the dust levels and looking at practical solutions for reducing dust. The "Housing for Health" project is funded by the National Aboriginal Health Strategy/Health Infrastructure Priority Program, South Australian Aboriginal housing unit and Christian Blind Mission.

The project duration was three weeks (two weeks funded by Rio Tinto and one by myself out of annual leave). It involved two visits to Pipalyatjara. The first visit in May 1999 lasted three days (two days travel time, one day at Piplyatjara) and involved selecting appropriate dust sampling sites and determining which method of measurement would be the most appropriate. Given the remote nature of the community and relatively low monthly rainfall, a system of 14 dust deposition gauges was selected as the most appropriate method.

Upon return from the first visit, CAT and I worked together to design and build the 14 gauge cages that would protect the dust deposition equipment. The CAT workmanship was first class and the units have subsequently functioned flawlessly in arguably some of the toughest conditions in Australia.

Back at Pipalyatjara in June/July, a town meeting was called to discuss the gauges and the proposed gauge positions. The meting was held in "language" and I am ever grateful to the Nganampa Health Council who
acted as liaison for CAT with the local community. The gauge cages stood either some 0.5 or 2m tall and even the two gauges that were to be positioned in the centre of town were keenly accepted as they were positioned to be the two left hand goal posts for the little kiddies play ground/football oval.

Over two days, of digging and mixing cement, all the gauges were installed. Monthly, samples are now taken from the gauges by CAT and returned to Alice Springs for measurement. This data is being combined with wind, traffic flow and fly numbers to give the "Housing for Health" project a quantitative measure of the benefit of sealing roads in remote communities.

Figure 1: One of the 14 dust deposition gauges being set in place just outside the community.

Outcomes
Since the completion of my involvement in the project the gauges have functioned well for 5 months and the data generated has established a good baseline for dust in and around the community prior to road sealing. We now await the sealing of the road so that its impact can be measured.

Personal Comments
The project is only a very small part of a much larger effort that is currently being undertaken to improve the quality of life in remote communities. But it, together with the other scientific studies currently underway, are helping to provide important quantitative information that can only help highlight appropriate technologies that actually provide benefit. The quality and number of people and different organizations working together in the area was very encouraging. I hope that other Rio Tinto employees who might have something to add, to this or any of the other areas in which CAT works, keep an eye out for the next round of fellowships and make the effort to get involved.
Dr Scott Buckingham has 4 years industrial experience working for Rio Tinto Research and Technical Development, Melbourne (where he is currently employed) and the Comalco Research Centre, Melbourne. He has a PhD in Chemical Engineering from the University of NSW and a BSc (Hons) in Chemistry/Geology from the University of Sydney.