



## Progress with dust management at Sigiri

Dust can be an environmental nuisance for the Sigiri mine and local communities alike. This is particularly so in the dry, windy season, when the northeast trade winds, popularly known as harmattan, blow in from the Sahara Desert.

In the mining context, dust can be generated from any area that has been disturbed and is exposed to wind. Open pits, waste rock dumps and tailings dams are all sources of such dust. During the operating life of the mine, these dust sources can be minimised by limiting the extent of surface disturbance, and by revegetating waste dumps and exposed tailings dam walls as mining use is completed. The recent corporate environmental review found that Sigiri has an established rehabilitation programme but needs to increase the areas that are being revegetated on an annual basis.

In an effort to address this issue, Sigiri embarked on a dust control project in February 2007. Says Dr William Bannerman, then head of safety, health and environment at Sigiri, recently appointed head of safety and environment in the West Africa region: "There are two main sources of dust at Sigiri – the run of mine (ROM) pad, where the material that has been mined is collected for further processing, and the movement of vehicles on dirt roads."

The primary source of the former is the stockpile, where loose saprolitic ore is discharged from the conveyor belt on to the ROM pad. This is aggravated by the relatively low humidity, high radiation (from the sun) and very windy conditions. In extremely dry and windy conditions this has led to the incidence of so-called 'Siguiro snow' – the covering of areas around the pad with a fine, whitish dust.

The main sources of road dust are the road to and from the old heap leach facility, between the plant and the heap leach, the road to and from the Koron residential area, the main road from the mine to Siguiro town and the haul roads. These roads are also used extensively by the local communities, including many artisanal miners as there is no barrier between mining areas and common areas. (See case study [www.aga-reports.com/07/Orpaillage-Siguiro.htm](http://www.aga-reports.com/07/Orpaillage-Siguiro.htm)).

Not only is the dust unpleasant, but it also presents a hazard to employee and community health. It affects visibility, increases the risk of accidents and can cause damage to equipment.

Among the measures introduced to mitigate dust pollution at Siguiro are:

- constant dousing of water on dry roads, including haul roads, with six to seven water doublers of between 16,000 to 32,000m<sup>3</sup> deployed each day;
- dust control trials, involving the use of molasses sprayed onto dirt roads in order to form a hardened, dust-limiting pavement. Success of these trials has led to a further 200 tonnes of molasses being ordered from Mali for application in the 2008 dry season; and
- ongoing experimental application of 'dust-off' chemical suppressant, as a wetting agent, which is sprinkled on the ore material along the conveyor belts to agglomerate dust particles and suppress emissions.

Although the measures employed to limit dust may seem routine, mines located in dry rural locations need to be vigilant in managing the issue.

According to Bannerman, an important part of the process has been consultation with community members.

"The issue of dust has been the subject of much discussion and indeed controversy. Dust is seen as the primary negative impact of the mine on the community. Discussions on the way forward have included community representatives, local government officials, employees, union leaders and community members."

The suppression measures adopted have resulted in some decrease in dust emissions although efforts to reduce this still further are continuing.

Adds Bannerman, "Designs are being developed for the construction of a stockpile dome at the ROM pad and are expected to be completed in January 2008. Depending on the outcome of the experimentation with the dust-suppression agent, construction of a stockpile dome could begin in mid 2008 as a permanent control."