Copper oxide (CuO) supplementation for ruminants depends on the period for which particles are retained in the abomasum (Dewey 1977). In sheep (Dewey 1977; Ellis unpublished), this is limited to about 30 days, but calves retain particles for at least 41 days (Suttle 1979). The aim of this report is to establish the retention times in adult cattle by identifying excreted particles, and by comparing estimates of the cumulative total copper excreted with the initial dose.

Hereford heifers grazing improved pasture were assigned to either a control group (S), or a group (15) dosed orally with 50 g CuO in a gelatin capsule. At varying times, large grab samples of faeces (.50 g DM) were taken from each animal. Particulate CuO was separated, and the remaining slurry was analysed for copper content. Using estimates of the daily faecal output derived from pasture digestibility and animal liveweights, the approximate total excretion of copper, including particles, was calculated.

The mean cumulative copper excretion, together with the data for animals with the highest and lowest copper excretion is presented in Fig. 1a. Even after 107 days, the treated animals were excreting copper at a greater rate than the control group. The accumulated excess over the control group at that time (c. 20 g) represented less than 50% of the total administered dose of CuO suggesting either large accumulation of copper in tissue, or retention of a significant proportion of particles in the gut. Since liver biopsy at Day 101 revealed an elevation in copper stores of less than 0.5 g, the former appears unlikely to account for all of the remaining copper. Additionally, the continuing excretion of particulate CuO (Fig. 1b) supports the belief that particles remained in the gut during the whole of this trial.


* CSIRO, Division of Animal Production, Armidale, N.S.W. 2350.