

Application Note

Filtered Pipette Tip Radioactive Aerosol Blocking

Objective To test the effectiveness of Clearline Filtered Pipette Tips at blocking radioactive aerosols. Techniques involving radioactive isotope are particularly sensitive to aerosol contamination. Tests were performed in an independent laboratory to show that radioactive aerosols do not penetrate beyond the filter to contaminate the shaft of the pipettor.

Materials and Methods A solution of water and fresh ^{32}P was made by adding 21ul of ^{32}P to 40ul ddH₂O, simulating a large quantity of end label. To accurately test for aerosol contamination, two new Eppendorf pipettors were used to handle the diluted isotope. At the outset, background radiation levels tested normal and no radiation was detected on the pipettor using a Geiger counter.

20ul of dilute isotope was aspirated and dispensed 3 times. The aspiration and dispensing was done quickly to promote aerosol formation. The tip was carefully removed and the pipettor was checked for contamination. Filters were also carefully removed from the pipette tip and cut approximately in half to detect radioactivity on the top of the filter. These steps were repeated, aspirating 50ul of the dilute mixture. Once the filtered tips were tested, non-filtered tips were tested following the same procedure as a control.

Results The Geiger counter indicated normal background radiation when the end of the pipettor was presented after both tests using filtered tips. The top half of the filter, which would be nearest to the end of the pipettor, did not have any elevated counts when measured on either trial. The lower half, proximal to the liquid, had counts ranging from 2,000-2,800 CPM for the 20ul aspirations and 4,500-5,200 CPM on the 50ul aspirations. The non-filtered tip tests resulted in transferable contamination of the pipettor end, confirmed by a wipe-test using a kim-wipe. Clearline Filtered Tips are effective at blocking radioactive aerosol.