

PAO AEROSOL AS REPLACEMENT FOR DOP

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ABSTRACT

DOP (diethylhexyl phthalate) aerosol is widely used as test particles of collection efficiency of air filters. However, DOP is the material listed in the endocrine disrupting chemicals and the confirmed carcinogens to animals. The research on replacement materials of DOP has been carried out for many years especially in microelectronics and atomic energy industries, and the Japan Air Cleaning Association (JACA) published the guideline of substituting materials of DOP in 2001, based on basic research and successive experiments performed by JACA's Committee. Their report will be reviewed in this presentation.

The required properties for the replacement aerosol are having the same performance for the fractional collection efficiency of air filters, stable generation and safe for human health. The filters used in the tests are ULPA, HEPA and quasi-HEPA filters in the size of 610mm*610mm*150mm. The test aerosols were DOP, PAO (poly-alpha-olefin), colloidal silica, fumed silica and PSL (polystyrene latex). The particle generation rate and the frequency distribution were measured in the size range of 0.1-1.0 μ m. As the test results of PAO aerosol in comparison with those of DOP aerosol, the fractional collection efficiency well agreed with each other. PAO is not involved in the list of endocrine disruptors and its aerosol indicates the equal performance to the conventional DOP aerosol. With these results, PAO is recommended as the replacement aerosol of DOP as the test particles of filters.