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Devices

## **A QUALITATIVE ANALYSIS OF FIVE TYPES OF NEGATIVE PRESSURE INDICATORS FOR AIRBORNE PRECAUTION ROOMS.**

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In order to assure the safety of healthcare workers taking care of tuberculosis patients, OSHA has proposed that negative pressure in these rooms “shall be qualitatively demonstrated (e.g., by smoke trails) daily while a room or area is in use for TB isolation.” (*Federal Register* 1997; 62:(201)54286). The ideal method for this daily monitoring should be one that is not labor intensive, can be performed quickly by staff in the area in which the rooms are located, is reasonable in cost for initial construction or retrofitting and will give consistently accurate information on the status of negative pressure. We examined five methods using eleven items and assigned one point to each criteria. These include purchase and installation costs, level of training needed to use the equipment, ease in performing daily monitoring, and audible alarms.

**RESULTS:** The Air Balance Hood, while providing a high degree of accuracy, had the lowest score (3); it is not conducive to daily use due to requiring trained engineering personnel to operate and its cumbersome design. In room, and remote electronic systems scored 8 and 7 respectively; they are accurate (but some indicate only the airflow mode) and are better when outside the room since observations can be made without entering the patients room. Smoke tubes scored 7 but have many disadvantages in daily monitoring, such as acrid smoke produced by most types of tubes, exposure of the operator to excessive smoke when testing many rooms in one day, and difficulty in seeing smoke in low light conditions. The non-electronic airflow direction indicator model scored ten points (our model did not have an audible alarm but it is available for this type of monitor). This system is easily installed, bi-directional, and can be set as a negative or positive monitor. It can be read from the hallway or the anteroom, it is inexpensive and cost effective and provides a simple mechanism for meeting OSHA requirements for daily negative airflow monitoring.