Simple Device for Indicating Atmospheric Status of Anaerobic Chamber Entry Locks

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A simple, inexpensive device is described that indicates which door of an anaerobic chamber entry lock was last opened.

The increasing emphasis being placed on anaerobic bacteriology in both the clinical and the research laboratory has necessitated the widespread use of equipment and procedures to produce and maintain anaerobic conditions. One such system is the anaerobic glove box, a flexible- or rigid-walled, air-tight chamber fitted with rubber gloves and a double-door entry lock. Supplies and materials to be used inside the chamber are passed into the entry lock. The lock is then evacuated and refilled one or more times with nitrogen gas followed by evacuation and refilling with a gas mixture, such as 85% nitrogen, 10% hydrogen, and 5% carbon dioxide. Materials can then be transferred from the "gassed" entry lock into the anaerobic chamber without introducing large amounts of oxygen.

We use a flexible vinyl chamber with a 12- by 18-inch (ca. 30.4- by 45.7-cm) (inside diameter) aluminum entry lock (Coy Manufacturing Co., Ann Arbor, Mich.). The entry lock is fitted with two top-hinged Plexiglas doors. This anaerobic chamber has proven to be a very versatile tool for both basic research and clinical anaerobic bacteriology and is used daily by several different workers in this laboratory. This frequent use by several workers created a problem, since each time material is removed from the chamber, the entry lock must be in the gassed state. Three procedures were used in an attempt to determine the gaseous state of the entry lock. Initially, a worker wishing to remove material from the chamber would have to find the person who last used the entry lock and rely on the memory of that individual as to whether the lock was last opened to the chamber atmosphere or to air. This procedure proved to be time consuming and highly unreliable. The next procedure tested, a "gassed/not gassed" checklist, was also unreliable since entries were not always recorded. A third alternative was to routinely evacuate and gas the lock each time material was to be removed from the chamber. This procedure was also time consuming, and it in-

creased gas usage.

The need existed for a simple, reliable device to indicate which of the entry lock doors was last opened. This need was filled by a single section of glass tubing and a piece of string. A 35-cm length of tubing with an inside diameter of 0.8 cm was securely taped to the top inside portion of the entry lock. A piece of string approximately 61 cm in length was threaded through the glass tubing and secured with tape to the inside of each Plexiglas door (Fig. 1). As one of the entry lock doors is opened, the excess string is pulled to that end of the lock. On closing the door, the excess string forms a loop between the door and the end of the glass tubing. When the opposite door is opened, the excess string is pulled to that end of the lock and again forms a loop when the door is closed. The loop of string, which can easily be seen through the Plexiglas doors, should always be next to the door which was last opened.

This simple, inexpensive device can be fabricated from material found in any laboratory and can be installed in less than 1 min. The device has worked well in this laboratory for over 2 years.

FIG. 1. Schematic longitudinal section of an anaerobic chamber entry lock: (1) glass tubing, (2) string, (3) Plexiglas door, (4) door-locking mechanism, (5) entry lock wall, (6) door hinge.