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**BARNEBEY & SUTCLIFFE CORPORATION**  
**SCENTOMETER: AN INSTRUMENT FOR FIELD ODOR MEASUREMENT**

U.S. Public Health Designation - Scentometer Model 1959-A \*\*  
Barnebey & Sutcliffe Designation - Model SCC  
(Modified to extend range)



A Member  
of the  
Sutcliffe  
Speakman  
Group

The Scentometer is used to determine the order of magnitude concentration of an odorant in air. It is essentially a rectangular, clear plastic box containing two chambers of activated carbon, two nasal ports for sniffing, two 1/2" diameter air inlets (one for each activated carbon bed), and six odorous-air inlets (1/32", 1/16", 1/8", 3/16", 1/4", and 1/2" in diameter). The odorous inlets are directly connected with a mixing chamber and the nasal outlets.

Air is drawn through the two beds of activated carbon (to make it odor-free) and then mixed with the contaminated air so as to produce a threshold concentration of the offending odor. The odorous-air inlet hole used to produce the dilution indicates the approximate concentration of the field odor.

The unit of expression most suitable for this work is the number of times that the odor is as strong as its threshold concentration or the number of dilutions with pure air needed to dilute it to the threshold concentration. This expression can be written as D/T (dilution to threshold).

The sizes of the six odorous-air inlets were selected on the basis of laboratory tests of the most practical set of inlets for field use. Experience has shown that odors above 7 D/T will probably cause complaints while those above 31 D/T can be described as serious nuisance if they persist for any length of time (see attached table).

**Instruction:** When in use, the Scentometer should be held so that the activated carbon beds are horizontal. Before opening any holes, try breathing through the nasal ports to be sure that there is no leakage anywhere, either around the nose piece or through the instrument. The holes are all covered with tape which is removed to expose the holes representing the odor concentration.

Start by leaving the two carbon ports open and closing off all the odorous-air ports. The user should breathe through the instrument for a short period of time so as to climatize his nose to a non-odor background. Then open the 1/32" odorous-air port. If after sniffing two or three times, no odor is discernible, close that port and open the next size, which is the 1/16". Progress up to the 1/2" odorous-air opening. If the odor is not then discernible, it must be assumed that the concentration of the undesirable vapor in the air is less than 2 thresholds. Other dilutions are obtainable by variations of port openings as indicated by the attached table.

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T-748  
10/HI

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It has been determined by test that the individual variation of odor sensitivity is sufficient in itself so that dilutions of other magnitudes between the recommended one are of no real significance. Further, a single individual's varying odor perceptibility is such that he will get different readings at different times, even with this instrument.

The user should practice with the Scentometer so as to become adept at obtaining a reading with a minimum exposure to the odorant. The nose has a habit of becoming desensitized to an odorant after a short period of time.

Parts List

The parts required for the construction of this instrument are as follows:

<u>Part No.</u>	
SCC-1	Scentometer body with perforated screens
SCE-2	Activated carbon charge
SCE-3	Plastic cover plate
SCE-4	Glass nasal inserts, pair
SCE-5	Nasal insert bushings, pair
SCC-6	Name-bushing plate, metal
SCE-7	Set of Allen-head screws (4)
SCE-8	Set of nameplate screws (4)
SCE-9	Set of plastic plug caps (4)

The background for the use of this instrument and its original design, conception and development can be found in the attached article which appeared in the December 1960 issue of the AIR POLLUTION CONTROL ASSOCIATION Magazine by Norman A. Huey, Louis C. Broering, and Charles W. Gruber; of the Bureau of Air Pollution Control and Heating Inspection, Cincinnati, Ohio.

The carbon in both beds should be changed once every six months (if the Scentometer is used occasionally) or more often (say, every three months) if it is used frequently. To change the carbon, detach the end plate (the one containing the nose pieces) by removing the two screws and pulling out the end plate, using the nose pieces or a hooked rod to help lift it out. The carbon is dumped out and the two spaces between the perforated sheets are filled with Type AC carbon (part SCE-2), tapping the Scentometer slightly to ensure that the carbon completely fills the space and no channeling can occur. The cover is replaced and screwed down securely. Any carbon grains which have found their way into the air spaces during filling can be shaken out through the air inlet holes. The Scentometer is now ready for reuse.

Some users order the instrument with extra sets of nose pieces because several operators may be using the instrument and they prefer to have their own nose pieces or because these are the only glass portions of the instrument and the only parts possibly subject to breakage.

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DILUTIONS TO THRESHOLD D/T WITH THE SCENTOMETER

Normally the Scentometer is used to read "Dilutions to Threshold" as indicated in the left-hand column. These dilutions are accomplished by opening one odorous air inlet at a time, while keeping the others closed.

DILUTIONS TO THRESHOLD D/T	ODOROUS AIR INLETS					
	1/2	1/4	3/16	1/8	1/16	1/32
350	x	x	x	x	x	o
170	x	x	x	x	o	x
31	x	x	x	o	x	x
15	x	x	o	x	x	x
7	x	o	x	x	x	x
2	o	x	x	x	x	x

o means hole is open (all others closed)

x means hole is closed

Dilutions other than the ones given above are possible by opening more than one hole at a time. We do not recommend that these intermediate values be used because it takes considerable personnel training in order to distinguish points between the standard ones given. Scentometer readings employing the standard values given above have been shown to be duplicatable by various Scentometer operators.