
PURPOSE

The purpose of this standard procedure is to determine the olfactory threshold (odor sensitivity) of an individual to a standard odorant.

INTRODUCTION

The Odor Sensitivity Test exists as a measurement of olfactory sensitivity for individuals who will be conducting odor strength assessments. The Odor Pen Test kit is comprised of n-butanol dispensing instruments which are organized on a dilution scale. A Test Individual's performance against this standard odorant exists as a reference of their sensitivity to odorants. A Test Individual is expected to produce a series of judgments with respect to the definable task of selecting one odorous presentation against two others that are odorless, thereby demonstrating an ability to distinguish like from unlike at set levels of dilutions.

SCOPE

This document provides technical instructions and specifications on the material items used to successfully accomplish the test. A step-by-step test plan is presented so that the Test Administrator may conduct the test with confidence and proficiency. Examples of Data Sheets constructed from both incorrectly and correctly recorded Test Individual responses are included to illustrate the score transcription format. Also included are blank Test Data Sheets that will be used to officially record and document test scores.

RENEWAL

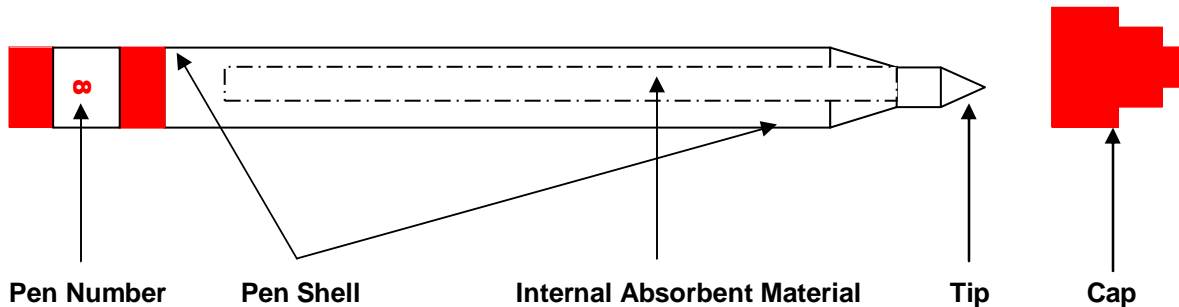
This Test Procedure is effective as of 1 April 2006, and is scheduled for review annually.

MATERIALS & RESOURCES

The testing method requires a Test Kit; approximate cost US\$230, containing the following items

- "Sniffin' Sticks" odor pens--14 n-butanol odor pens and 2 blank pens in a Test Kit box. 6-month shelf life or 50 tests whichever comes first.
- Blind fold (sleeping mask).
- Odor Sensitivity Test Data Sheets A through C.
- Nitrile exam gloves

Not included in the Test Kit but recommended are odorless cotton gloves that can be worn by the test administrator during testing to minimize hand odor influence.

Illustration I. Schematic of n-butanol Odor Pen

Within the kit, pens containing the n-butanol odorant are labeled with numbers 2-15 and each of the red pens is impregnated with a certain dilution that is different than the others on the series. Also in the kit are two blank pens filled only with odorless solvent. **Pens are labeled with numbers on an arbitrary number scale.** The blanks are numbered 1 and 16 and their caps are colored green or blue. The numbering of the blank pens has no significance. N-butanol is a common odorant used in felt tip marker pens; tested individuals are generally familiar with its odor.

When the cap is removed the odorant will be released from the felt tip of the pen. The cap should only be taken off to present the pen or to conduct a quality assurance inspection of the kit. This limits the potential of the felt tip being contaminated. The life cycle of the pen kit is expected to be 6 months or 50 tests, whichever comes first.

The odor pens' felt tip must not contact skin or facial hair. Thirty minutes (30 min) is necessary for the administrator to complete the presentation section of the test for one individual.

REFERENCES

ASTM E544-99, Standard Practice for Referencing Suprathreshold Odor Intensity, Approved April 10, 1999 and Published July 1999.

ASTM E679-04, Standard Practice for Determination of Odor and Taste Thresholds by Forced-Choice Ascending Concentration Series Method of Limit Approved April 1, 2004 and Published April 2004.

ASTM E1432-04, Standard Practice for Defining and Calculating Individual and Group Sensory Thresholds from Forced-Choice Data Sets of Intermediate Size, Approved April 1, 2004 and Published April 1, 2004.

EN 13725:2003, Air Quality – Determination of Odour Concentration by Dynamic Olfactometry, BSI, Head Office, 389 Chiswick High Road, London W4 4AL, UK.

Heinrich Burghart GmbH, Manual for Odor Sticks “Sniffin’ Sticks”, Tinsdaler Weg 175, D-22880 Wedel, Germany, Tel.: +49 (0) 4103-800 76-0, Fax: +49 (0) 4103-80076-29, Web: www.burghart.net

TERMINOLOGY

Test Individual—The person being tested and responding to the presented pens while blindfolded.

Test Administrator—The presenter of the test and is also who prepares the pens and scores the Data Sheet.

Individual Threshold—The level on the dilution scale where the Test Individual first detects the odor pen and consecutively correctly detects the odor pen again at the following level.

SUMMARY of METHOD

The testing procedure determines an individual's olfactory sensitivity by using odor pens, devices like felt tip pens that contain 1-butanol (n-butanol), a standard odorant. The combination of standard presentation methods and statistical analysis make this test a reliable method of measuring individual olfactory sensitivity.

The practice combines two standard procedures. First, the ascending concentration procedure utilizes 14 odor pens that contain an increasing concentration of n-butanol in discrete steps (15=lowest and 2=highest). Second, the test uses a presentation method called “3-alternative forced choice (3-AFC), also known as triangular force-choice (TFC) method. The method requires the individual to indicate which pen contains the odorant out of a triplet of pens, one of which is an n-butanol odor pen and the other is an odorless pen, used twice as the blank pen. Presenting the same pen for both blank observations ensures the consistency of the “odorless” sensation. The individual will make three sniffing observations, one of each pen, and will be forced to make a choice, even if no difference is observed. When making a choice between pen one, two or three, the test individual will indicate the selection as detect if a detectable odor difference is perceptible or will state guess if no difference is observed between the pens in the series. A response of detect is given even in the case that the odor is only observed in one of the two nostrils.



Table I. Summary of Responses

| Symbol Recorded by Test Administrator | Description of Response | Stated by Test Individual When... |
|---------------------------------------|---|---|
| G | A GUESS is a random selection of one of the three presented pens. | Three pen odors are indistinguishable. |
| D | A DETECT is confidently noticing one of the three pens is emitting an odor. | One pen odor can be distinguished as n-butanol from the other two pens. |

A detection threshold is the concentration of the odorant that has a 0.5 probability of being detected under test conditions. The probability of detection at any of the 14 concentrations is not a fixed attribute of the individual but a value, which assumes that olfactory sensitivity varies as a result of random fluctuation in factors such as alertness, attention, fatigue, health status, and the possibility of variable presentation of the odor pen.

This test procedure requires a presentation series called a Warm Up to approximate the olfactory threshold of the individual and for the individual to establish proficiently how to complete the task. The Warm Up is followed by Round 1 and Round 2. The Test Administrator calculates the results following a statistical procedure in which the score is the average of the first correct detect of two correct detects in a row from Round 1 and Round 2.

The Test Data Sheet is used as a guide for presenting the odor pen and blanks. One of three Test Data Sheets will be randomly selected for recording the test individual's presentation observations. The three Test Data Sheets presentation columns are sequenced in unique predetermined random orders. The Test Administrator presents the pen triplet for a concentration level in the order that is coded on the Test Data Sheet. The presentation code sequence follows that the odor pen corresponds to the shaded box in the triplet row. The two un-shaded boxes correspond to the blank pens. The red pens in the kit correspond to the n-butanol pens and the blank pen is the green, blue or other than red colored pen.

The individual should wait 30 minutes after any meal, snack or drink before testing and the meal or snack must not consist of spicy food items. During the 30 minutes period before testing, the individual may consume water. They should be free of cold, flu or allergy symptoms. A pregnant person should be excluded from testing. The test administrator should check that none of the pens in the kit smell like an odor other than 1-butanol or a blank. If a pen is malodorous, it should

be discarded and replaced.

DETAILED PROCEDURE

1. Test Administrator presents odor pen # 2 to the Test Individual to familiarize the Test Individual with the odor of n-butanol. The sniffing technique used in the evaluation is to sniff as if naturally sniffing the end of a felt tip marker.
2. Test Individual places the blindfold over eyes to prevent visual detection of odor pens. (If the blindfold that is provided with the kit is a discomfort to the test individual, other blindfolds may be used.)
3. Open the Test Kit Box. The odor pens are arranged in numerical order. The most dilute odor pen (weakest) corresponds to number 15 and the least dilute (strongest) corresponds to number 2.
4. Test Administrator is to complete the top portion of the ***Odor Sensitivity Test Data Sheet***. Fill in the name of the Testing Individual and the date and time of the test.
5. Test Administrator starts the test with the Warm Up. The starting point is odor pen 15 or 14, depending upon the chosen presentation schedule, and will furthermore present every-other odor pen dilution level (i.e. 15, 13, 11 or 14, 12, 10, respectively). Lay the pen triplets (odor containing pen, one blank used twice) on the foam pad in the Test Kit Box in the order corresponding to the sequence on the Test Data Sheet.
6. Test Administrator announces the first pen of the dilution level as "Number One Pen." The Administrator will remove the pen cap and verbally instruct the Test Individual to take a "Sniff". The command "Sniff" will be given each time the Test Individual is expected to smell the odor pen, which is twice per pen, once under each the left and right nostril. The pen is to be held for three seconds, 1/2" below each nostril.
7. Test Individual will smell the odor pen and must remember the pen number that was announced when presented (Number One Pen).
8. Test Administrator immediately replaces the cap on the odor pen. The second pen in the triplet sequence is verbally announced as "Number Two Pen". The Administrator will remove the pen cap and the statement "Sniff" will be made when the pen is presented to

- the right and left nostril. The pen is to be held for three seconds, 1/2" below each nostril.
9. Test Individual will smell the odor pen and must remember the pen number that is presented (Number Two Pen).
 10. Test Administrator replaces the cap on the odor pen. The third pen is verbally announced as "Number Three Pen". The Administrator will remove the pen cap and the statement "Sniff" will be made when the pen is presented to the right and left nostril. The pen is to be held for three seconds, 1/2" below each nostril.
 11. Test Individual will smell the odor pen and must remember the pen number that is presented (Number Three Pen).
 12. Test Individual indicates which one of the three presented pens (One, Two, and Three) is different from the other two pens. The test individual must indicate their response as a GUESS or DETECT.
 13. Test Administrator records the Individual's response in the first, second or third box in the dilution level row on the Test Data Sheet. The test administrator records the response as a capital "G" for GUESS or "D" for DETECT.
 14. Test Administrator replaces the 15 odor pen in the pen line-up and selects odor pen 13, the next presentation dilution level. Lay the pen triplets (odor containing pen, one blank used twice) in the box in the order corresponding to the sequence on the Test Data Sheet.
 15. Test Administrator waits thirty seconds (30 sec) before proceeding to the presentation of odor pen 13 and the blank pen(s), following the same procedure as used for the odor pen 15 (see above steps 3-12)
 16. Test Administrator concludes the Warm Up when the Test Individual has indicated two correct consecutive detects. Correct guesses are *not* correct detects. A correct detect is considered a "false positive" if it is not immediately followed by a second correct detect.
 17. Test Administrator waits five minutes before starting Round 1. Start Round 1 three dilution levels above the first of two consecutive correct detects of the Warm Up. Proceed

- by laying the pens (odor containing pen and one blank used twice) in the Test Kit Box on the indented foam presentation pad. **NOTE:** Round 1 requires the odor pen level to proceed in sequence, thus the Test Administrator will furthermore select the odor pen at the next dilution level lower than the preceding level and no longer alternate levels.
18. Test Administrator follows Warm Up procedure for Round 1 with the exception of *not* skipping every-other odor pen, as noted above.
 19. Test individual continues to observe the pens when presented and indicates guess or detect for the different pens in the triplet.
 20. Test administrator concludes Round 1 when the test individual has indicated two correct consecutive detects. Correct guesses are not considered correct detects.
 21. Test administrator scores Round 1. The dilution level of the first of two consecutive correct detects is the score.
 22. Test administrator waits five minutes before starting Round 2. Start Round 2 with the odor pen two dilution levels above the first of two consecutive correct detects of Round 1. Laying the pens (odor containing pen and one blank used twice) in the Test Kit Box on the indented foam presentation pad. Round 2 requires the odor pen level to proceed in sequence, thus the test administrator will furthermore select the odor pen at the next dilution level lower than the preceding level.
 23. Test administrator concludes Round 2 when the test individual indicated two correct consecutive detects. Correct guesses are not considered correct detects.
 24. Test administrator scores Round 2. The dilution level of the first of two consecutive correct detects is the score.
 25. Test administrator averages the scores of Round 1 and Round 2 to generate the tested individual's olfactory (odor) threshold estimate.
 26. Test administrator, initials and records the date and time of test on the Testing Record, which is on the inside cover of the Test Box kit.

JUDGEMENTS/DECISIONS

Assessment Recommendations

An individual's olfactory threshold is based on a series of judgments made by the individual. It is important to recognize that the determination of an individual's threshold is a definable task in which precision of the result is mainly a question of the number of times the individual takes the test.

Agencies that monitor odor can use the Odor Pen Test Kit and procedure to set performance standards for their programs or qualification criteria. The odor sensitivity of an individual can be well-estimated from their performance the first time the test is administered, contingent upon the test being presented according to the instructions. Therefore, a viable score is derived from one performance. However, to determine the variability of the individual's sensitivity and to increase the chances that the level of sensitivity is accurate, results should be acquired over a series of test presentations. Designing a sensitivity testing program that evaluates individual's scores by achieving a baseline score from the first performance result and thereafter generating an average and standard deviation is technically necessary for conducting statistical analyses. Also, a collection of sensitivity score per individual provides a foundation for understanding the performance range of the individual. In other words, a statistical analysis of sensitivity scores is a more meaningful way to report the results by producing defensible and valid performance records and generating a standard setting process regarding the selection and training of odor assessing individuals.

Test Program Example

Each individual will be tested three times during the first 30 days of the Test Program to establish a "baseline" individual threshold. Each individual will then be tested monthly.

Testing Recommendations

The Test Administrator is expected to demonstrate a proficient level of ability in relation to preparing and presenting this test.

The Administrator will not communicate how well Test Individuals are scoring or what dilution level they are observing, during the test. Only at the conclusion of the evaluation will the Test Individual receive information about the results.

Odor Sensitivity Test



St. Croix Sensory, Inc

Each pen within each dilution level is presented once. A Test Individual may ask a pen to be repeated but this should be limited. A test can be abandoned and restarted at a later time during the same day if it becomes necessary to do so. The test procedure must start from the beginning and the incomplete test discarded in its entirety.

If Test Individual becomes aware of a glove smell, the glove may be removed and the test presented without.

Test Administrator selects which of randomly sorted presentation schedule A-C Data Sheets to select.

Test Administrator decides to rotate between 15 and 14 as the start point for Warm Up.

REPORTS

The Test Administrator will be capturing the Test Individual's responses on the Odor Sensitivity Test Data Sheet, leading to the Sensitivity Score. For the measured outcome to be considered reliable the Testing Materials must be prepared according to the aforementioned instructions, the Detailed Procedure steps be followed and duplicated and the responses recorded accurately on the Test Data Sheet so statistics may be calculated. Any deviation from the instructions described by this Standard Practice jeopardizes the accuracy of the outcome and leads to striking the score from the record retesting the Test Individual.

Illustration II. Correctly Filled Out Data Sheet

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Level | Warm Up | | | Level | Round 1 | | | Level | Round 2 | | |
|-------|---------|---|---|-------|---------|---|---|-------|---------|---|---|
| | 1 | 2 | 3 | | 1 | 2 | 3 | | 1 | 2 | 3 |
| 15 | | | | 15 | | | | 15 | | | |
| 14 | | | | 14 | | | | 14 | | | |
| 13 | | | | 13 | | | | 13 | | | |
| 12 | | | | 12 | | | | 12 | | | |
| 11 | | | | 11 | | | | 11 | | | |
| 10 | | | | 10 | | | | 10 | | | |
| 9 | | | | 9 | | | | 9 | | | |
| 8 | | | | 8 | | | | 8 | | | |
| 7 | | | | 7 | | | | 7 | | | |
| 6 | | | | 6 | | | | 6 | | | |
| 5 | | | | 5 | | | | 5 | | | |
| 4 | | | | 4 | | | | 4 | | | |
| 3 | | | | 3 | | | | 3 | | | |
| 2 | | | | 2 | | | | 2 | | | |

Round 1: Starting Point is 3, Proceed back from the front two consecutive correct Warm Up Detects.

Round 2: Starting Point is 3, Proceed back from the front two consecutive correct Round 1 Detects.

The Score is the first level of two consecutive correct D responses.
SCORE: 6 SCORE: 6

Individual's Odor Sensitivity (average of the SCORES): 6

Responses are indicated by D or G and each round concludes after two correct consecutive detects. The score of 6 is valid.

Illustration III. Example of a False Positive

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Warm Up | | | | Round 1 | | | | Round 2 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| Level | 1 | 2 | 3 | Level | 1 | 2 | 3 | Level | 1 | 2 | 3 |
| 15 | | | | 15 | | | | 15 | | | |
| 14 | | | | 14 | | | | 14 | | | |
| 13 | | | | 13 | | | | 13 | | | |
| 12 | | | | 12 | | | | 12 | | | |
| 11 | | | | 11 | | | | 11 | | | |
| 10 | | | | 10 | | | | 10 | | | |
| 9 | | | | 9 | | | | 9 | | | |
| 8 | | | | 8 | | | | 8 | | | |
| 7 | | | | 7 | | | | 7 | | | |
| 6 | | | | 6 | | | | 6 | | | |
| 5 | | | | 5 | | | | 5 | | | |
| 4 | | | | 4 | | | | 4 | | | |
| 3 | | | | 3 | | | | 3 | | | |
| 2 | | | | 2 | | | | 2 | | | |

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

The Score is the first level of two consecutive correct D responses.
SCORE: 7

Individual's Odor Sensitivity (average of the SCORES): 6.5

The correct detect at level 11 was not followed by a second correct detect. The response was a False Positive. The round continues until two consecutive correct detect responses are given. This Data Sheet is properly filled out and the 6.5 score is valid.

Illustration IV. Incorrectly Filled Out Data Sheet

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Warm Up | | | | Round 1 | | | | Round 2 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| Level | 1 | 2 | 3 | Level | 1 | 2 | 3 | Level | 1 | 2 | 3 |
| 15 | | | | 15 | | | | 15 | | | |
| 14 | | | | 14 | | | | 14 | | | |
| 13 | | | | 13 | | | | 13 | | | |
| 12 | | | | 12 | | | | 12 | | | |
| 11 | | | | 11 | | | | 11 | | | |
| 10 | | | | 10 | | | | 10 | | | |
| 9 | | | | 9 | | | | 9 | | | |
| 8 | | | | 8 | | | | 8 | | | |
| 7 | | | | 7 | | | | 7 | | | |
| 6 | | | | 6 | | | | 6 | | | |
| 5 | | | | 5 | | | | 5 | | | |
| 4 | | | | 4 | | | | 4 | | | |
| 3 | | | | 3 | | | | 3 | | | |
| 2 | | | | 2 | | | | 2 | | | |

Warm Up presentations alternate every other dilution

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

The Score is the first level of two consecutive correct D responses.
SCORE: 5

Individual's Odor Sensitivity (average of the SCORES): 5.6

The marks fail to distinguish between Guess and Detect. This is unreliable response recording. The 5.5 Score cannot be considered valid.

APPENDICES

Example Odor Sensitivity Test Data Sheet

Odor Sensitivity Test Data Sheet A

Odor Sensitivity Test Data Sheet B

Odor Sensitivity Test Data Sheet C

KEYWORDS

Odor, sensitivity, threshold, odor pen



EXAMPLE: Odor Sensitivity Test Data Sheet A

Name : Jane Doe

Date : 1.1.05

Time : 11:00 AM

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Warm Up | | | Round 1 | | | Round 2 | | | | | |
|---------|---|---|---------|-------|---|---------|---|-------|---|---|---|
| Level | 1 | 2 | 3 | Level | 1 | 2 | 3 | Level | 1 | 2 | 3 |
| 15 | G | | | 15 | | | | 15 | | | |
| 14 | | | | 14 | | | | 14 | | | |
| 13 | | | G | 13 | | | | 13 | | | |
| 12 | | | | 12 | | | | 12 | | | |
| 11 | G | | | 11 | | | | 11 | | | |
| 10 | | | | 10 | | | | 10 | | | |
| 9 | | G | | 9 | | | | 9 | | | |
| 8 | | | | 8 | G | | | 8 | | | G |
| 7 | | G | | 7 | | | G | 7 | G | | |
| 6 | | | | 6 | | D | | 6 | | | G |
| 5 | D | | | 5 | D | | | 5 | | | D |
| 4 | | | | 4 | | | | 4 | D | | |
| 3 | | D | | 3 | | | | 3 | | | |
| 2 | | | | 2 | | | | 2 | | | |

Warm Up presentations alternate every-other dilution

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

The Score is the first level of two consecutive correct D responses.

SCORE: 6

SCORE: 5

Individual's Odor Sensitivity (average of the SCORES): 5.5

Test Administrator : John Smith

Odor Pen Kit Serial Number : S/N xxxx-xxx



Odor Sensitivity Test Data Sheet A

Name : _____ Date : _____ Time : _____

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Level | Warm Up | | | Level | Round 1 | | | Level | Round 2 | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------|-------------------------------------|-------------------------------------|-------------------------------------|
| | 1 | 2 | 3 | | 1 | 2 | 3 | | 1 | 2 | 3 |
| 15 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

Warm Up presentations alternate every-other dilution

The Score is the first level of two consecutive correct D responses.

SCORE: _____ SCORE: _____

Individual's Odor Sensitivity (average of the SCORES): _____

Test Administrator : _____

Odor Pen Kit Serial Number : _____



Odor Sensitivity Test Data Sheet B

Name : _____ Date : _____ Time : _____

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Level | Warm Up | | | Level | Round 1 | | | Level | Round 2 | | |
|-------|--------------------------|--------------------------|--------------------------|-------|--------------------------|--------------------------|--------------------------|-------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | | 1 | 2 | 3 | | 1 | 2 | 3 |
| 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

Warm Up presentations alternate every-other dilution

The Score is the first level of two consecutive correct D responses.

SCORE: _____ SCORE: _____

Individual's Odor Sensitivity (average of the SCORES): _____

Test Administrator : _____

Odor Pen Kit Serial Number : _____



Odor Sensitivity Test Data Sheet C

Name : _____ Date : _____ Time : _____

The Red Pen presentation order is designated by the shaded box.
Record Responses as G for guess and D for detect.

| Warm Up | | | | Round 1 | | | | Round 2 | | | | |
|--|----|-------------------------------------|-------------------------------------|-------------------------------------|----|-------------------------------------|-------------------------------------|-------------------------------------|----|-------------------------------------|-------------------------------------|-------------------------------------|
| Level | 1 | 2 | 3 | Level | 1 | 2 | 3 | Level | 1 | 2 | 3 | |
| Warm Up presentations alternate every-other dilution | 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 15 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 14 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 11 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 8 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Round 1 Starting Point is 3 levels back from the first of two consecutive correct Warm Up Detects

Round 2 Starting Point is 2 levels back from the first of two consecutive correct Round 1 Detects

The Score is the first level of two consecutive correct D responses.

SCORE: _____ SCORE: _____

Individual's Odor Sensitivity (average of the SCORES): _____

Test Administrator : _____

Odor Pen Kit Serial Number : _____