

EPIDEMIC LAB

Introduction:

Some people are carriers of disease. These carriers may show no symptoms associated with that disease. The danger is that others may come in contact with diseases unknowingly. AIDS, hepatitis, and common colds are transmitted widely and quickly in this manner. It is sometimes useful for public health workers to identify the original carrier. Through tracing that person's contact, the path of disease can be uncovered.

In this lab, one of you is the original carrier of a "disease". It is carried in a test tube rather than in the body—and who is infected is a secret. This original carrier then makes contact with others that make contact with others.

Background:

Acids and bases are very often colorless solutions. Strong acids and bases can give very bad burns especially to exposed membranes like those in the eyes. They can eat through clothing and damage furniture. Strong acids and bases should always be properly labeled. A number called the molarity, abbreviated M, indicates the strength of an acid or base. The molarities of the HCl and NaOH used in this exercise are 0.001M and 0.01M, respectively, so they are relatively mild and pose little harm unless they get into your eyes or mouth. Safety glasses are required for participation in this exercise just in case of a splash.

Phenol red is a pH indicator. It changes colors depending upon whether the solution to which it is added is an acid (becomes yellow) or a base (becomes red).

Materials Needed:

Stock test tube

Non-stock test tube

Plastic pipet

Procedure:

Remove one pipet full of solution from your non-stock test tube. Then choose someone at random from your class. Empty your pipet into your contact's test tube as she or he simultaneously does the same to your test tube. In other words, approach your contact with "charged" pipets.

Place the top on your test tube and shake your test tube gently to mix the solution.

On the board, write down under "Round 1" the name of the person with whom you exchanged solutions.

Repeat step 2 twice more (Rounds 2 and 3), each time with a different contact. Record the information on the board.

When all the contacts have been made, the instructor will add one drop of phenol red to your test tube to see if you are infected with the “disease”. This is equivalent to being tested at a clinic.

RED—you’ve got it!

YELLOW—no infection (whew!)

Empty the test tube containing colored solution into the sink drain and flush immediately with running water. Wash your test tube with soap and water, toss the plastic pipet into the trash. Clean up any spills with soap and water.

Using an asterisk, mark those students’ names in the data table whose test tube solutions turned red.

Discussion:

Trace the transmission of the “disease” to each student testing positive. Can you determine who the original carrier was? We’ll check the stock solution of the suspects to find out!