

STI transmission demonstration

This activity also appears on my blog alongside further tips to deliver SRE:

<http://sexedukation.wordpress.com/2011/06/01/3-masterplans-to-cover-hiv-aids-education-in-your-lessons/>

I personally developed this practical to be one of the safest for non-science teachers, with the most effective visual result. (For example the ones using milk and starch/iodine, because milk is "semen coloured", give a confusing colour change as in all cases the milk changes colour but only some go blue black and some go brown so it's hard to tell who was actually infected). If you would like to share this activity please acknowledge the source.

Equipment

- Plastic cups
- Pipettes
- Bottle of water (tap is fine but distilled if possible)
- 0.5M citric acid solution (easily made up from citric acid powder (your science department should have some or it is available from some chemists)- 105g in 1 litre of water is 0.5Molar but beware the solution goes off so 10.5g in 100ml water or 21g in 200ml water etc. will produce the same strength without wasting the solution- I often approximate to a small teaspoonful of powder dissolved in one of the cups will give necessary strength solution)
- Blue Litmus paper
- Safety goggles

Method

1) Give each student a clear plastic cup full of liquid and a plastic pipette (DO NOT LET STUDENTS DRINK IT!). Each cup needs to be filled with 50mls of water except for one which is to be filled with citric acid solution (the infection- it is a good idea to give the "infected cup" to a gregarious class member so the "infection" is more likely to spread!). Tell students that they don't know what this liquid is so they should treat the liquid as possibly dangerous- it should not touch skin, eyes, clothes etc. (Citric acid is relatively mild but it is an eye irritant so you will probably want to borrow safety goggles if you can't trust the class to follow the rules. See Hazcard on Citric acid below for more information).

2) Students to mimic spread of disease by mixing the contents of their cups (containing either water or one with citric acid the "infected one") using pipettes. They can choose to not to mix with anyone, they can choose to only mix with one other person, or lots of people up to a maximum of 10 people. For smaller groups you can issue character cards with a scenario on it to guide a range of different behaviours and discuss the outcomes. Reinforce that students must ask permission before they "mix cups" with anyone and that anyone who doesn't is guilty of "an assault" and will be removed from the activity. Also be aware this session has been known to bring up homophobic issues- ie. same genders mixing their cups, although in most cases students are happy to mix cups with either gender. Deal with any homophobic incidents according to school policy and reinforce your ground rules at start of the session.

3) At the end of the task the teacher is to test each cup for "infection" with blue litmus paper. If a student has been infected with an "STI" the indicator paper will turn pink.

4) Discuss conclusions from the experiment and discuss possible different scenarios eg. "not having sex, only having sex with one partner, having sex with multiple partners, wearing a condom ("condom" could even be demonstrated with the finger of a rubber glove!")

N.B It is a very good idea to practice this before you do it with the class and make sure everything works - it is a disaster if it doesn't work in front of the class!

Chemical Safety Data: Citric Acid

Common synonyms	Citric acid monohydrate, 2-hydroxy-1,2,3-propanetricarboxylic acid
Formula	$C_6H_8O_7$
Physical properties	Form: White crystalline powder Stability: Stable Water solubility: high Specific gravity: 1.54
Found naturally in...	Many fruits and vegetables, especially the citrus family. Citric acid may account for nearly 10% of the dry weight of certain varieties of limes and lemons.
Principal hazards	*** Citric acid can cause serious irritation if it gets into your eyes *** Repeated exposure can cause skin irritation or, eventually, allergic reaction, in some susceptible individuals
Safe handling	Wear safety glasses.
Emergency	Eye contact: Immediately flush the eye with plenty of water. If irritation persists call for medical help. Skin contact: Wash off with water. If swallowed: Unlikely to be harmful unless the amount swallowed is substantial. If this is the case, call for medical help
Disposal	Small amounts of citric acid can be flushed down a sink with a large quantity of water, unless local rules prohibit this.
Protective equipment	Safety glasses.

Taken from: http://cartwright.chem.ox.ac.uk/hsci/chemicals/citric_acid.html