Some reactions of sulfur dioxide – student sheet

Procedure

1. Cover the worksheet with a clear plastic sheet.
2. Place the base of the Petri dish directly over the circle provided. Place the reaction vessel in the centre.
3. Place two drops of full-range indicator solution where shown.
4. At another corner of the triangle, place two drops of ammonia solution. Place the lid on the Petri dish and wait for the indicator drop to change colour.
5. Remove the lid from the Petri dish and, using a piece of tissue, mop up the drop of ammonia.
6. At the two remaining corners of the triangle, add the two other test solutions.
7. Add a small quantity of sodium sulphite powder to the reaction vessel, followed by three drops of hydrochloric acid. Quickly replace the lid.
8. Record all your observations over the next 15 minutes.

Question

1. What explanations can you give for your observations?

Health, safety and technical notes

- Read our standard health and safety guidance here https://rsc.li/3eeAKq4
- Students must wear eye protection.
- Sulfur dioxide is toxic and is a particular problem for asthmatics. Only use a very small amount of sulfite and acid to keep the sulfur dioxide production to a minimum. A risk-assessment should include any individual sensitivities (see CLEAPSS Hazcard HC097).
- Hydrochloric acid 1 mol m^{-3}, potassium iodide 0.2 mol dm^{-3}, potassium iodate(V) 0.1 mol dm^{-3} and potassium manganate(VII) 0.01 mol dm^{-3} are all of low hazard (see CLEAPSS Hazcards HC047a, HC047b, HC080, HC081).
- Sulfuric acid 1 mol dm^{-3} is a skin/eye irritant (see CLEAPSS Hazcard HC098a).
- Sodium sulfite powder is a skin, eye and respiratory irritant. Depending on its formulation, full range indicator can still be flammable when diluted 1:1 with water. Keep away from sources of ignition (see CLEAPSS Hazcard HC092).