

Volcano (vinegar and baking soda)

Written by: Phillip Crisp

Commenced on: 20 Feb 2018

Expires: 20 May 2019

Classes for which experiment is required

Teacher: Phillip Crisp (training code 6)

Year Group: 6

Room

Date

611

Thu 1/3/18

Procedure or reference, including variations

PC p26

http://www.riskassess.com.au/info/learning_resources**Equipment to be used****aluminium tray****dishwashing detergent***Potential hazards*

Do not drink.

film canister**flour***Potential hazards*

ALLERGY ALERT. Do not eat in Science laboratory, due to the possibility of chemical contamination. Also, some students may have a gluten allergy.

food colouring, red*Potential hazards*

ALLERGY ALERT. May cause an allergic reaction in some individuals. Do not drink.

newspaper*Potential hazards*

Easily flammable.

Standard handling procedures

Avoid use near naked flames.

paint brush*Potential hazards*

May splash paint into eyes.

paper, coloured*Potential hazards*

Easily flammable.

Standard handling procedures

Avoid use near naked flames.

plastic cup*Potential hazards*

Flammable. May release toxic fumes if burnt. Cup transmits heat of hot fluid, causing it to become uncomfortable to hold. Organic solvents may affect the plastic, causing leaks.

Standard handling procedures

Use insulating foam cups for hot liquids. Do not use plastic cups for organic solvents. Do not heat with bunsen burner.

sand*Potential hazards*

Sand may be thrown around and cause eye injury. May be source of toxoplasmosis, if sand is outside and not covered.

Standard handling procedures

Should be covered when not in use, due to the possibility of a cat infected with toxoplasmosis defaecating in the sand.

water paint, children's*Potential hazards*

Check label to ensure ingredients are not toxic. Do not ingest. May cause skin irritation.

Chemicals to be used and produced

acetic acid, vinegar (~0.7-1.3 M; ~4-8% wt/wt) (ethanoic acid)

CH₃COOH_(aq)

Class: nc PG: none Users: **K-12*** Training: 1-6*

CAS: 64-19-7

GHS data: Not classified as a hazardous chemical.

Potential hazards
Irritant vapour.

carbon dioxide, gas generated during experiment

CO₂

Class: 2.2 PG: none Users: **K-12** Training: 1-6

CAS: 124-38-9

GHS data: Not classified as a hazardous chemical.

Potential hazards
Harmless, in quantities generated during experiments.
Toxic at high concentrations in air due to absorption through lungs into blood, lowering the pH.

Standard handling procedures
DO NOT GENERATE CARBON DIOXIDE IN A CLOSED CONTAINER SINCE THE CONTAINER MAY EXPLODE.
Magnesium burns in carbon dioxide to form magnesium oxide and carbon.

sodium hydrogen carbonate, solid (baking soda, bicarbonate of soda, sodium bicarbonate)

NaHCO₃

Class: nc PG: none Users: **K-12*** Training: 1-6*

CAS: 144-55-8

GHS data: Not classified as a hazardous chemical.

Potential hazards
Low toxicity.

water <43.5°C (cold-warm)

H₂O

Class: nc PG: none Users: **K-12** Training: 1-6

CAS: 7732-18-5

GHS data: Not classified as a hazardous chemical.

Potential hazards
Cold water causes numbness and hypothermia if exposure is prolonged. Water below 43.5°C is generally considered safe for adults and children.

Standard handling procedures
Water in a laboratory should not be drunk, due to the possibility of chemical contamination. Water spilled on the floor may be a slip hazard.

Knowledge

I have read and understood the potential hazards and standard handling procedures of all the equipment, chemicals and living organisms.

I have read and understood the (Material) Safety Data Sheets for all chemicals used and produced.

I have copies of the (Material) Safety Data Sheets of all the chemicals available in or near the classroom.

Risk assessment

I have considered the risks of:

fire	breakage of equipment	electrical shock	radiation
explosion	cuts from equipment	escape of pathogens	waste disposal
chemicals in eyes	sharp objects	heavy lifting	inappropriate behaviour
inhalation of gas/dust	rotating equipment	slipping, tripping, falling	allergies
chemicals on skin	vibration and noise	falling objects	special needs
runaway reaction	pressure	heat and cold	other risks

Certification by Teacher

I have assessed the risks associated with:

preparing the equipment, chemicals and living organisms for this experiment,
performing this experiment with students in the class room, and
cleaning up after the experiment and disposing of wastes,

on the basis of likelihood and consequences using the School's risk matrix, according to International Organization for Standardization Standard ISO 31000:2009 and the Risk Management Guidelines, HB 436:2013.

I consider the inherent level of risk (risk level without control measures) to be:

Low risk **Medium risk** High risk Extreme risk

Control measures:

Ensure that students do not inhale vinegar fumes or get vinegar in eyes or in cuts on skin.
Don't let students drink the red "lava" fizz.

With the specified control measures in place, I have found that all the risks are "low risk". Risks will therefore be managed by routine procedures in the classroom, in combination with the specified control measures.

Name: **Signature:** **Date:**

Monitoring and review

This risk assessment will be monitored using comments below and will be reviewed within 15 months from the date of certification.

Attach further pages as required