

# Primary RiskAssess

www.riskassess.ca

## Risk Assessment Tool for Elementary Science

- Make your STEM investigations safer
- Meet your legal obligations
- Feel more confident



Elementary schools are legally required to conduct risk assessments prior to science investigations. The safety information in Primary RiskAssess allows teachers to design and carry out scientific investigations with greater confidence and lower risk. More than 160 Elementary Schools in Australia and New Zealand subscribe to Primary RiskAssess.

Primary RiskAssess is a web-based system that makes performing risk assessments quick and easy. Primary RiskAssess has been specifically designed for use by Elementary teachers.



### Risk Assessment and Practical Order

School:

Author:

Experiment name:

Text reference:   
(or procedure)  
Can include web links. Eg.

Classes for Which Experiment is Required

Teacher:

Year group:

Chemical training codes:

Scheduling: 

Room	Date (d/m/yy)
611	5/7/18

  
[More classes...](#)

Scheduling notes:

### Equipment, Chemicals and Biologicals for Risk Assessment

For each section below, enter one or more words to search on and then click 'Search & Add'. If a match is found, it will be added to your risk assessment. For example, in the 'Chemicals Used' section, enter 'iron oxide', click the button, and it will be added to your risk assessment. You can also search by chemical formulae (eg. CH<sub>3</sub>COOH), and incomplete words (eg. 'ir' or 'will find iron oxide).

Equipment

cup, plastic	<a href="#">Remove</a>
food colouring, red	<a href="#">Remove</a>
aluminium tray	<a href="#">Remove</a>
dishwashing detergent	<a href="#">Remove</a>
sand	<a href="#">Remove</a>
newspaper	<a href="#">Remove</a>
water paint, children's	<a href="#">Remove</a>
paint brush	<a href="#">Remove</a>
flour	<a href="#">Remove</a>

[Search & Add](#)

Multiple results found. Click one below, or search again.

- paper
- paper, brown
- paper, butcher's
- paper, carbon
- paper, coloured
- paper, craft
- paper, glossy black
- paper, glossy white
- paper, graph
- paper, universal indicator
- paper, white

Chemicals Used

acetic acid, vinegar (~0.7-1.3 M; ~4-8% w/w)	<a href="#">Remove</a>
sodium hydrogen carbonate, solid	<a href="#">Remove</a>

[Search & Add](#)

Chemicals Produced

carbon dioxide, gas generated during experiment	<a href="#">Remove</a>
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[Search & Add](#)

Biologicals and Food

[Search & Add](#)

Other Items:

Includes potential hazards & standard handling procedure

By running 'Update Risk Assessment' you accept the [Conditions of Use](#) for the RiskAssess website.

[Update Risk Assessment >](#)

Teachers will find using Primary RiskAssess simple, as it includes:

- an electronic template for risk assessments, following the Canadian ISO Standard on Risk Management
- safety information for chemicals, equipment and living organisms
- online help and learning resources
- hot-links to documents, diagrams, websites, Safety Data Sheets, etc
- recording of risk level and control measures
- easy sharing of experiments between school staff
- experiment scheduling system and chemical labelling
- access for unlimited numbers of simultaneous users
- use on computers, iPads, tablets and smart phones
- storage of risk assessments for legal purposes.

The cost of a year's subscription to RiskAssess is \$250.00 per school campus. A subscription lasts 365 days from the date that payment is received and includes all upgrades during that period.

You can subscribe online at [www.riskassess.ca](http://www.riskassess.ca) or email your school name to [info@riskassess.ca](mailto:info@riskassess.ca) to arrange a free 2-week trial. If you have further questions, please contact [info@riskassess.ca](mailto:info@riskassess.ca) or contact Dr Phillip Crisp on +61 2 9415 8677.

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# Safety requirements for science/STEM experiments in Elementary Schools

The legislation in each Province and Territory<sup>1</sup> requires risks to be assessed before an investigation is carried out. This requirement applies to Elementary Schools, as to all other places of work.

According to the Occupational Health and Safety Code in Alberta, for instance:

“An employer must assess a worksite and identify existing or potential hazards before work begins . . . must prepare a report on the results of a hazard assessment and the methods used to control or eliminate the hazards identified . . . must ensure that the date . . . is recorded . . . must ensure that the hazard assessment is repeated . . . at reasonably practicable intervals . . .” [Part 2, 7(1)-(4)].

In particular jurisdictions, specific legislation applies.

In Alberta, for example, recent changes to the Alberta OHS Act require<sup>2</sup>

- All employers must inform workers about potential hazards and have access to basic health and safety information

National legislation for WHMIS 2015 mandates the GHS (Globally Harmonized System of Classification and Labelling of Chemicals) throughout every workplace and updates legislation in other areas<sup>3</sup>.

“Employers will continue to:

- educate and train workers on the hazards and safe use of hazardous products in the workplace;
- ensure that hazardous products are properly labelled;
- prepare workplace labels and SDSs (as necessary); and,
- ensure appropriate control measures are in place to protect the health and safety of workers”

<sup>1</sup> Please see [www.riskassess.ca/info/legally\\_required](http://www.riskassess.ca/info/legally_required) for a summary of the legislation.

<sup>2</sup> Government of Alberta, Alberta Occupational Health and Safety Act, Highlights of Changes Effective June 1, 2018.

<sup>3</sup> <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/occupational-health-safety/workplace-hazardous-materials-information-system/whmis-2015.html>

**Volcano (vinegar and baking soda)**

Written by: Phillip Crisp

Commenced on: 12 Jun 2018

Expires: 12 Sep 2019

**Classes for which experiment is required**

Teacher: Eva Crisp (training code 6)

Year Group: 6

Room

Date

611

Thu 5/7/18

**Procedure or reference, including variations**

PC p26

[http://www.riskassess.com.au/info/learning\\_resources](http://www.riskassess.com.au/info/learning_resources)**Equipment to be used****aluminium tray****dishwashing detergent***Potential hazards*

Do not drink.

**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.

**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****acetic acid, vinegar (~0.7-1.3 M; ~4-8% wt/wt)** (ethanoic acid)**CH<sub>3</sub>COOH(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.

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

**NaHCO<sub>3</sub>**

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.

### Chemicals to be produced

**carbon dioxide, gas generated during experiment**

**CO<sub>2</sub>**

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.

### Knowledge

I have read and understood the potential hazards and standard handling procedures of all the equipment, chemicals and biological items, including 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 biological items, including 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.

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*