

# RiskAssess

## **Risk Assessment Tool for Science Laboratories** including lab scheduling, prac ordering and GHS labelling

Schools are legally required to conduct risk assessments prior to experiments<sup>1</sup>. More than 2700 schools in Australia, New Zealand and Canada subscribe to RiskAssess and have conducted over 9,000,000 risk assessments!

RiskAssess is a web-based system that makes performing risk assessments quick and easy. Using RiskAssess, schools can meet their legal obligations and make their science laboratories safer.

RiskAssess is customised for use by teachers and laboratory technicians and includes:

- an electronic template for risk assessments, following the ISO Standard on Risk Management
- GHS chemical safety information for more than 3,000 chemicals and solutions
- disposal advice for all chemicals and solutions
- safety information for equipment and biologicals
- laboratory scheduling system, including lab ordering
- GHS labelling system for pure chemicals and solutions
- hot-links to SDSs, documents, diagrams, websites . . .
- recording of inherent risk level and control measures
- easy sharing of experiment templates for customisation
- full text of eBook "Safety in Schools" (30 chapters; 250 p)
- use on computers, iPads, tablets and smart phones
- storage of risk assessments for legal purposes
- online help and learning resources
- complies with all State, Territory and National requirements
- training videos.

The cost of a year's subscription to RiskAssess is \$350.00 + GST per school campus. A subscription lasts 365 days from the date that payment is received and includes all upgrades during that period. Subscription to Student RiskAssess is also available for an additional \$350.00 + GST per school campus.

You can subscribe online at **www.riskassess.com.au** or contact Phillip Crisp on 02 9415 8677 or **info@riskassess.com.au** if you wish to discuss RiskAssess further.

nicals Used ochloric acid 8-10 M (25-32% wt/wt) nesium, ribbon	Remove Remove		Multiple results found. Click one below, or search again. sodium hydroxide sodium hydroxide, solid sodium hydroxide 4 1 M (SE) udwat
	Search & Add	Í	<ul> <li>sodium hydroxide &gt;1.3 M (&gt;5% wt/wt)</li> <li>sodium hydroxide 0.51-1.3 M (2-5% wt/wt)</li> <li>sodium hydroxide 0.12-0.51 M (0.5-2% wt/wt)</li> </ul>
ng experime	nt <b>Remove</b>		sodium hydroxide <0.12 M (0.5% wt/wt)
	Search & Add		

<sup>1</sup>Please see http://www. riskassess.com.au/info/ legally\_required for a summary of the legislation.

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## RiskAssess

RiskAssess is an integrated web-based tool designed to assist school staff to create risk assessments in a standard printable format, specially customised for school laboratories.

Safety data about chemicals, equipment and living organisms are stored in RiskAssess. When you choose a chemical or other item, RiskAssess automatically incorporates safety information into the risk assessment. A series of simple prompts leads users through the system, making it easy to create risk assessments for each experiment.

Each risk assessment contains sections in which the teacher and laboratory technician separately certify that risks have been assessed for their particular area of responsibility. If the inherent level of risk is "medium" or above, control measures need to be entered; experiments with "high" or "extreme" level of inherent risk require approval by an authorised person. RiskAssess includes provisions for monitoring and for review in each risk assessment, as required by law. RiskAssess easily satisfies all State, Territory and National requirements.

RiskAssesss can also assist communication between teachers and laboratory technicians for planning and preparing experiments, and for laboratory scheduling. RiskAssess includes fields relating to the timetabling of the experiment and the items to be used. Both teachers and lab techs can access risk assessments through the lab scheduling system or, alternatively, risk assessments can be emailed.

Risk assessments can be printed, stored online, searched online, shared between staff, copied and archived for legal purposes. A paper-based or paperless work flow can be followed, depending on school policy.

All databases for chemicals, equipment and living organisms are regularly updated and extended. There have been many upgrades of RiskAssess including a laboratory scheduling system and the addition of GHS chemical information and solution data, and disposal advice.

RiskAssess includes an easy-to-use chemical labelling system (GHS compliant) for >1600 pure chemicals and their common solutions, plus a custom labelling system for mixtures and commercial products.

User feedback assists the RiskAssess team in deciding which features to include in upgrades.

Our team invites feedback and contributions from users, so that the system can be improved. The RiskAssess team provides prompt and personal service, should you have any problems.

## www.riskassess.com.au

>> EXAMPLES **See below** for a screenshot of the RiskAssess software in use. **See right** for a sample risk assessment.

RiskAsse Tools for Safe Science	
Risk Assessment a	Ind Practical Order
Author:	Phillip Crisp
Experiment name:	Making hydrogen
Text reference: (or procedure) Can include web links. Eg, http://www.example.com	Science World 7, p.52 Cork to be used to trap hydrogen gas prior to "popping".

Classes for Which Experiment is	Required			
Teacher:	Phillip Crisp			
Year group:	10			
Chemical training codes: Explanation of codes	Teacher	Lab Tech		
Scheduling: You can leave off the year for classes in 2018	Room 611 More classes	Period 3	Date (d/m/yy) 1/3/18	
Scheduling notes: Additional scheduling notes for the laboratory technician				
Equipment / chemicals to be	Qty x Item (c	or groups)		
prepared by laboratory technician: For example 10 groups of: 3 x Mg ribbon, 2cm long 1 x 50mL 1M HCl bottle	8 groups of 2 x magnes 1 x 2M hydr	sium ribbon, 2 c rochloric acid, t	m kottle, 50 mL	

Equipment, Chemicals and Biologicals for Risk Assessment To each school holds, wells row enror works to search and and then cisk Stearch Addr. If a match is found, it will be added to your risk assessment. For example, in the Chemicals Used sector, wells 'fron code', cick the buttor, and it will be added to your risk assessment. You can also search by chemical formula (or SylCoOM), and incomplete works (or, for will find fron code).



#### LEGAL NOTE

Teachers and lab techs carry out risk assessments on different activities. A teacher assesses activities in the classroom and a lab tech assesses activities before class and after class. Only the person carrying out an activity can take into account all the factors, including facilities available, student behaviour, students with allergies and students with special needs.

	Making	hydrogen		Eco	Solve High School
Vritten by: Phillip Crisp	Commer	nced on: 25 Jun 20	025 <b>E</b> :	xpires: 25	Sep 2026
Classes for which experiment is required	d	,		•	
eacher: Phillip Crisp (training code 1) Ye	ar Group:	10	Room	Period	Date
			611	3	Mon 30/6/25
tems to be prepared by laboratory technicia	an (trainin	g code 2)		, ser	
groups of: 2 x magnesium ribbon -2 cm				pred by used.	ated
$1 \times 2M$ hydrochloric acid, bottle, 50 mL			Datae	her she generation	ne
Procedure or reference, including variat	ions		are	ier text ically by	tem.
cience World 7, p.52			Allo	utomassess	
fork to be used to trap hydrogen gas prior to "p	opping".			K.	
quipment to be used					
box of matches		<u>.</u>			
<i>Potential hazards</i> Box burns violently if ignited.		Keep dry. A used	<i>g procedur</i> match sho	<i>es</i> uld never be	e returned to a
		box of matches, i	n case it is	hot enough	to ignite
		matches in box. (	Count boxe	s out and in	
small borosilicate glass test tube ~75 .	 mm x 8 m	m (Pyrex test tube	~75 mm	x 8 mm)	
Potential hazards		Standard handlin	g procedur	es	
Breakage of test tubes. Cuts from chipped test	-tube	Inspect and disca	rd any dan	naged test to	ubes. Sweep up
rims. Small test tubes more likely to eject mate	erial	broken glass with	brush and	dustpan; do	not use fingers.
		stuck and swell. E	Borosilicate	test tubes a	are generally
		recommended if	the content	s are to be	heated. Rimless
		offer no advanta	ubes are ki de over tub	nown as "igr es with rims	s for heating
		solids over a Bun	sen flame.		J
Potential hazards		Standard handlin	a nrocedur	95	
Flammable. Take care fitting corks into glass co	ontainers,	Do not place in fla	ame.	5	
since the container may break if the stopper is	too large				
or too much force is applied. Take extreme car glass tubing into holes in corks: ensure hole is	e inserting correct				
size for tube and tube is lubricated with glyceri	ne or oil.				
wooden splint (splinter, taper)					
<i>Potential hazards</i> When lit, it acts as an ignition source: may cau	se burns	Standard handling Extinguish woode	g procedur n splint wit	<i>es</i> h water hef	pre disposal.
Possibility of splinters, especially if damaged.		_/gu.o			
Chamicals to be used					
hydrochloric acid 3-8 M (10-25% wt/wt)					нси
Class: nc BG: none Hears, 7.12	<b>T</b>	aining: 1-5			CAS: 7647-01-0
CIIC data:		anning. 1-5			
Causes serious eye iri	ritation				
WARNING Causes skin irritation	,   wwit= 1!				
May cause respiratory	irritation				
Potential hazards		Standard handlin	a procedur	<u>م</u>	
Irritates eyes, lungs and skin.		Avoid inhalation of	of vapour o	r skin conta	ct.
		Disposal			
		Retain for collect	ion by a wa	aste service	or <20 mL/day
		may be poured y	with stirring	n, into 50 tin	hes the volume of

water, then poured down the drain. Residues should be placed in an Acid waste container.



Retain for collection by a waste service or <100 g/day may be dissolved in dilute hydrochloric acid and poured of magnesium with dichromate salts, nitrate salts, sulfur, down the drain. Do not place in the garbage, due to the phosphorus or halogenated solvents can be dangerously possibility of ignition. violent. Reaction of magnesium with silica (sand) to form



be used as a fuse for the thermite reaction.



asphyxiant; hydrogen/air mixture in lungs can explode if ignited. Detonation ("popping") of small volume of hydrogen/air mixture in sturdy test tube by ignition with match or wooden taper is generally safe; breakage of test tube is possible. Do not ignite or detonate balloons filled with hydrogen gas.

may be violent after a long induction period. Reactions

silicon may be dangerously exothermic if the silica is not completely dry. Do not use magnesium as an alternative to aluminium in the thermite reaction; the reaction is dangerously explosive. Magnesium ribbon can, however,

> hydrogen only in small volumes (<1 mL). Detonate hydrogen/air mixtures only in small undamaged test tubes (<8 cm; <5 mL). Use borosilicate ("pyrex") test tubes; do not use thin-walled soda glass test tubes. Protect against flying broken glass from breakage of test tubes.

#### Disposal

<10 L/day may be released to the atmosphere, provided no ignition source is present.

#### 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 Safety Data Sheets for all hazardous chemicals used in the experiment. I have copies of the Safety Data Sheets of all the hazardous chemicals available in or near the laboratory.

#### Risk assessment

I have considered the risks of:

fire or explosion chemicals in eyes inhalation of gas/dust chemicals on skin ingestion of chemicals runaway reaction heat or cold breakage of equipment

injuries from equipment rotating equipment electrical shock vibration or noise sharp objects falling or flying objects contamination of area exposure to pathogens

biohazards injuries from animals environmental impact intense light/lasers UV, IR, nuclear radiation pressure inside equipment heavy lifting slipping, tripping, falling

waste disposal improper labelling/storage inappropriate behaviour communication issues allergies special needs ethical issues other risks

For outdoor activities, consider wind, temperature, rain/hail/snow, UV, air quality, fire danger, pollen, bites/stings etc

#### **Certification by Teacher**

I have assessed the risks associated with performing this experiment in the classroom on the basis of likelihood and consequences using the School's risk matrix, according to International Organization for Standardization Standard ISO 31000:2018.

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

Low risk	Medium risk	High risk	Extreme risk	
Control me	asures:			
Hold test tu Explain pos Ensure stud Additional n	be away from body sibility of test tube ents check test tub neasures: safety gl	when poppin breakage and bes for signs of asses	g. importance of safe f damage before po	ty glasses. opping.
With the spe by routine p	cified control meas ocedures in the cla	ures in place, assroom, in co	I have found that a mbination with the	Il the risks are "low risk". Risks will therefore be managed specified control measures.
Name:		Sig	nature:	Date:
Certificatio	on by Laboratory	y Technician		
I have asses organisms, f of likelihood Standard ISC	sed the risks assoc or this experiment and consequences 0 31000:2018.	iated with prep and subseque using the Scho	paring the equipme ntly cleaning up af ool's risk matrix, a	nt, chemicals and and biological items, including living er the experiment and disposing of wastes, on the basis cording to International Organization for Standardization
I consider the	e inherent level of	risk (risk leve	without control me	easures) to be:
Low risk	Medium risk	High risk	Extreme risk	
Risks will the	refore be managed	d by routine pr	ocedures in the lal	poratory.
Name:		Siq	nature:	Date:

#### Monitoring and review

Wednesday, 4 July 2018

This risk assessment will be monitored using electronic review notes or hand-written notes on a printout. It will be reviewed within 15 months as part of the regular review process.

### Laboratory scheduling

Laboratory technicians can use the scheduling screen to see future and past experiments, and keep track of those they have prepared. Experiments occurring today, tomorrow, this week, next four weeks, last week or any dates can be viewed. Other features include a check box to show that an experiment has been prepared, a prep note box, summary details, and a hotlink to provide easy access to the original risk assessment. Teachers can use the scheduling screen to access risk assessments, view any equipment conflicts and to check that an experiment has been prepared. Rescheduling of an experiment is arranged with a click of a button. Experiments for any date range can be downloaded in CSV format for further processing in Excel.

2       611       10       Phillip Crisp	Period	Room	Year	Teacher	Experiment & Procedure	Prepared?
Nursday, 5 July 2018         Period       Room       Year       Teacher       Experiment & Procedure       Prepare         1       436       11 Chemistry       Eva Crisp       Crystal growing Science World P45       Science World P45       Science World P45       Science World P45	2 Need mor Save N	611 re Mg ribbon. ote >	10	Phillip Crisp	<ul> <li>Making hydrogen</li> <li>Science World 7, p.52</li> <li>Cork to be used to trap hydrogen gas prior to "popping".</li> <li>Lodged: 10 Jun 2018, 3:21pm</li> </ul>	
436 11 Chemistry Eva Crisp Crystal growing Science World p45 Add Prep Note Lodded: 10 Jun 2018. 3:26pm						
	iursday, <sup>9</sup> eriod	5 July 2018 Room	Year	Teacher	Experiment & Procedure	Prepared?

## **GHS** labelling

A simple labelling system allows laboratory technicians to produce GHS-compliant labels in four sizes for 3000 chemicals and their solutions. Just enter the name of the chemical and the concentration (if it is a solution), then click "Download labels" for a perfect A4 sheet of labels that you can print on sticky label sheets in Avery sizes or print on paper and cut out! Options are available for custom labels for commercial products, colour spots, and "SDS available".



## Learning resources

#### THE BOOK: "Safety in Schools" by Phillip Crisp

Full text of 30 chapters of training book (250 pages), covering many important topics in schools. Download as an eBook for use by staff and students at schools subscribing to RiskAssess.

#### • Training videos

- getting started, tips & tricks, videoed presentations
- Legal requirements for schools to perform risk assessments
- current legal requirements throughout Australia
- Risk assessment and control of risks
- explanation of the logic and the process
- Routine safety procedures
- recommendations for routine laboratory requirements
- Disposal
- guide to the disposal of chemical wastes, waste containers, waste labels
- **Globally Harmonised System of Chemical Classification and Labelling** - explanation of GHS and the GHS solutions data
- Safe culturing of microorganisms
  - general advice
- Australian Curriculum requrements for students to perform risk assessments
- safety requirements for each year
- Presentations on risk assessment
  - Powerpoint files for you to use