

SDS and Label First Aid

Questions and Answers

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September 2014

www.ccohs.ca

Who is **CCOHS**

- Canadian Centre for Occupational Health and Safety (CCOHS)
- Established in 1978 by an Act of Parliament
- Governed by a tripartite council
- Promotes total well-being – physical, psychosocial and mental health – of working Canadians

Evidence-Based Approach



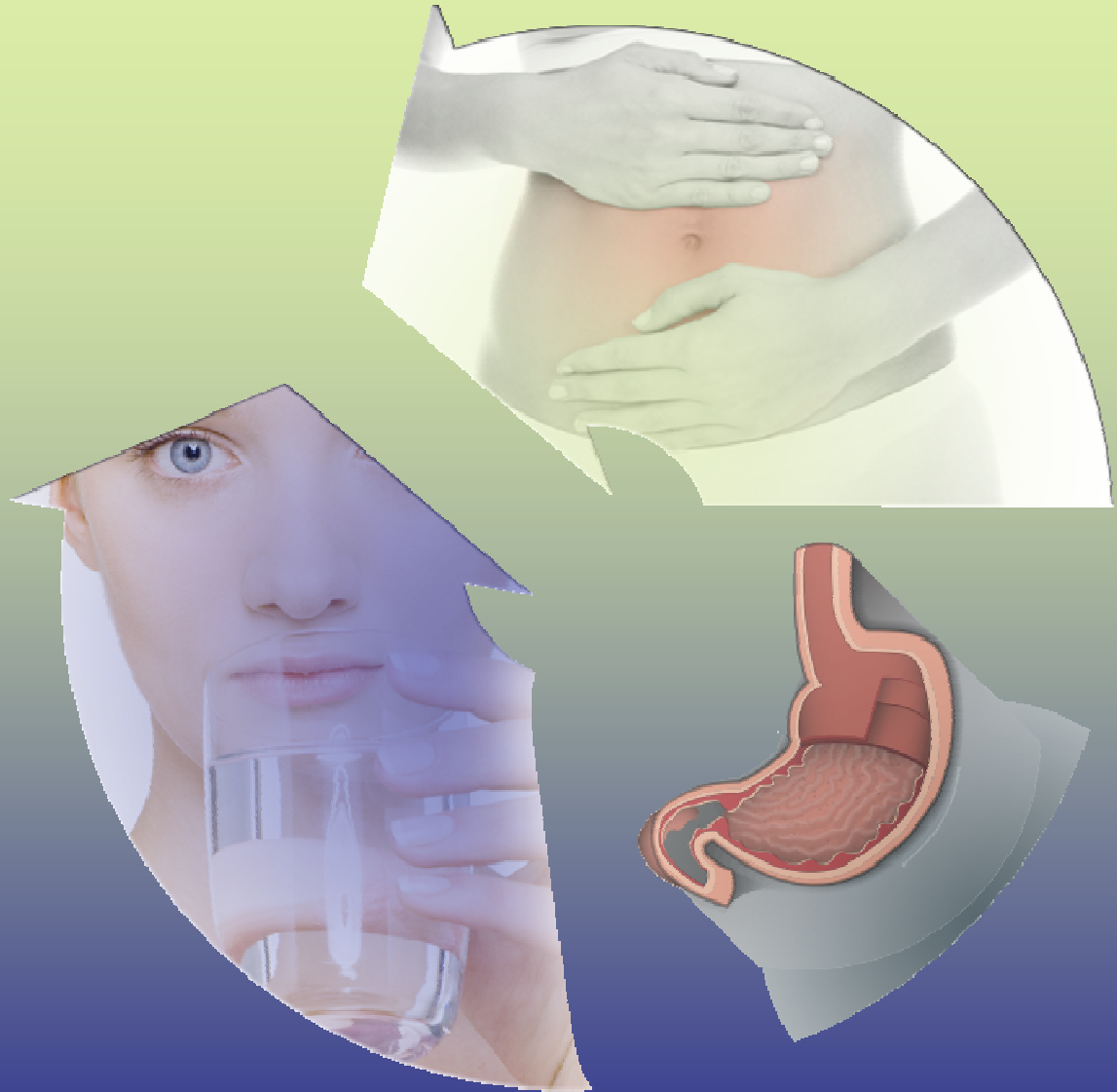
- Identify specific questions
- Search for relevant literature
- Critically evaluate the quality of the literature
- Determine best answer

Questions from Spring Meeting

- ~50 questions received
- Ingestion exposure
- Flush/rinse duration
- Supplemental instructions
- Advice for non-hazardous products
- Resources



Ingestion



Questions



- What determines the use of "induce vomiting" versus "do not induce vomiting"?
- Is it ever okay to recommend inducing vomiting?
- Many MSDSs recommend the use of activated charcoal or solutions/emulsions containing activated charcoal. Do many companies actually have this on site?
- Is it bad practice to warn for aspiration hazard when the product is not classified as an aspiration hazard?

To Induce or Not to Induce...



This is the question!

Induction of Vomiting

- Generally discouraged
- “Selective” rather than “routine” procedure
- Depends on:

Who?

What?

How much?

When?

Induction of Vomiting

Is it ever okay to recommend inducing vomiting?

- SDS/label should not recommend inducing vomiting
- Induction of vomiting is only appropriate if the first aid responder is advised to do so by a doctor or Poison Control Centre



Key Sources



- American Academy of Clinical Toxicology & European Association of Poison Control Centres and Clinical Toxicologists position papers on gastric lavage and syrup of ipecac
- Goldfrank's Toxicologic Emergencies

Activated Charcoal

- First discovered in the 19th century
- Adsorbs chemicals in the gastrointestinal tract
- Decreases absorption
- Reduces or prevents systemic toxicity



Activated Charcoal



Activated charcoal should not be routinely administered as a first-aid procedure:

- No definitive studies showing improved outcome of human poisonings
- Palatability issues
- Risk of vomiting and aspirating the activated charcoal

Activated Charcoal



Evidence-Based Conclusion

- May be considered for ingestion of a potentially toxic poison up to 1 hour previously

BUT...

- There must be evidence that the substance/ mixture is adsorbed to charcoal

Activated Charcoal



Do many companies actually have activated charcoal on site?

If they use a product that is toxic by ingestion and there is evidence that it can be adsorbed by activated charcoal, it is likely a good idea.

Should SDS's or labels routinely recommend the use of activated charcoal?

They should not.

Key Sources



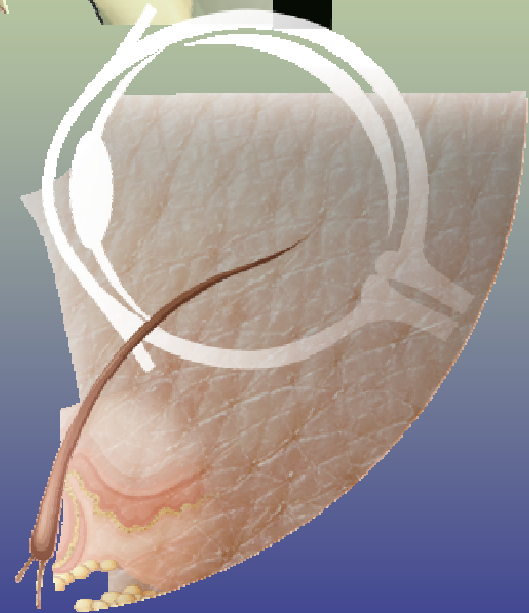
- American Academy of Clinical Toxicology and the European Association of Poisons Centres and Clinical Toxicologists position statement
- Markenson, et al., Circulation, 2010
- Isbister, et al., Emergency Medicine Journal, 2003
- Seger, Clinical Toxicology, 2004
- Olsen, Journal of Medical Toxicology, 2010

Aspiration Hazard

Is it bad practice to warn for aspiration hazard when the product is not classified as an aspiration hazard?



Flush/Rinse Duration



Questions



- Where did the 15 minutes come from?
- Should SDS writers try to be more realistic around these statements – whether it be shorter or longer?
- Can you comment on the information that is not included in the GHS Precautionary Statements, e.g., flush time?
- What are the pro's and con's for including duration?

Question



Does the change from "rinse for 20 minutes" (set time) to "rinse for several minutes" (not specified) reduce protection for workers?

For eyes, CCOHS says 30-60 minutes to flush for acid exposure but GHS standardized phrases say 15 minutes.

Overview



- Very little research available
- Few animal studies, mainly with sodium hydroxide and hydrochloric acid
- Small number of reviews of human case reports
- Most studies have not evaluated the duration of flushing/rinsing
- Available studies have limitations

Flush/Rinse Duration

Where did the 15 minutes come from?

SKIN

- At least 20 minutes of water rinsing

National Safety Council, 1985

EYE

- 7-year period; several thousand incidents
- Immediate, thorough washing with tap water
- 15-minute flushing periods in medical dispensary

McLaughlin, 1946

Flush/Rinse Duration



So, bottom line is that I may or may not have been able to identify exactly where the 15 minutes originally came from.

What we now know....

Skin Evidence

- 1-minute exposure of rats to 2N sodium hydroxide
- 60 minutes for subcutaneous pH to return to normal when flushing begun within one minute
- From 15 minutes on, significant decrease in pH compared to no treatment
- At 90 minutes, pH had not returned to normal when flushing started within 10 minutes

Yano, et al., 1993 and Yano, et al., 1994

Skin Evidence

- 1-minute exposure of rats to 2N sodium hydroxide
- 32 minutes for subcutaneous pH to return to normal when flushing begun within one minute

Andrews, et al., 2003

Skin Evidence

- 1-minute exposure of rats to 1N hydrochloric acid
- 10 minutes for subcutaneous pH to return to normal (7.7) when flushing begun within one minute.
- Decline in pH ceased after flushing initiated, never fell below 7.5
- 60 minutes for subcutaneous pH to return to normal when flushing begun within 3 minutes

Yano, et al., 1995

Skin Evidence

Conclusions from current review of principles and practices of skin decontamination:

- The time allocated for washing contaminants affects decontamination efficiency.
- In all cases, improvements in the degree of decontamination was observed with increased washing time.

Chan, et al., 2013

Eye Evidence

- 1-minute exposure of rats to 2N sodium hydroxide
- 5 minute versus 15 minute rinse with tap water
- Maximum pH similar (10.13 versus 10.25)
- Time to maximum pH longer (14 min. versus 18 min.)
- Lower pH after 3 hours (8.54 versus 8.11)

Kompa, S., et al., 2005

Eye Evidence

- 20 second exposure of enucleated pig eyes to 2 mol sodium hydroxide
- 15 minute flush 20, 40 or 60 seconds later with tap water
- pH assessed – better results with quicker rinsing
- Conclusion: Immediate rinsing for at least 15 minutes is imperative

Rihawi, et al, 2007

Eye Evidence

- Systematic, evidence-based review
- Patients treated with prolonged irrigation (with physiological saline over 1-2 hours) reported shorter duration of treatment at hospital and absence from work.(*Saari, et al. 1984*)
- There is insufficient evidence to draw conclusions on the optimum duration of eye irrigation.

Chau, et al., 2011

Flush/Rinse Duration

SKIN and EYES

- Copious/large amounts of water (acid/alkali)
- Flushing time not specified
- Delays of even seconds can dramatically affect outcome

American Heart Association/American Red Cross, 2010

- Eyes: 15-30 minute rinse/flush
- Skin: 15-20 minute rinse/flush

Many Standard Sources

GHS

SKIN

- Rinse skin with water [or shower]
- Poison Centre/doctor (Cat. 1)
- Wash with plenty of water
- Medical advice/attention (Cat. 2)

EYES

- Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (Cat. 1, 2A/B)
- Poison Centre/doctor (Cat. 1)
- Medical advice/attention (Cat. 2A/B)

Hazard Communication

US EPA Study (1997)

- Qualitative research on comprehensibility of first aid statements
- 23 one-on-one interviews
- Participants responded best to simple, very specific statements
- More inclined to do what was called for when specifically stated

Rinse skin for 10-15 minutes.

Better than: Rinse skin thoroughly.

Flush/Rinse Duration

Should SDS writers try to be more realistic around these statements – whether it be shorter or longer?

- Difficult to be “realistic” when so few chemicals studied.
- Insufficient evidence to properly address question of flush/rinse duration
- Makes sense to tailor duration to degree of irritation
- More research required



Flush/Rinse Duration

Can you comment on the information that is not included in the GHS Precautionary Statements, e.g., flush time? What are the pro's and con's for including duration?

Pro's

- Evidence that longer flushing may be warranted for corrosives, especially penetrating corrosives
- Clear instructions for first aid responders in an emergency situation

Con's

- Lack of research to support decisions on duration

Flush/Rinse Duration

Does the change from "rinse for 20 minutes" (set time) to "rinse for several minutes" (not specified) reduce protection for workers?

Possibly....

- Depends on how first aid responders interpret “rinse for several minutes”
- Clearer, more specific instructions are always better
- Very likely that medical provider will continue rinsing

Most important message – no delay – seconds count!

Flush/Rinse Duration

For eyes, CCOHS says 30-60 minutes to flush for acid exposure, but GHS standardized phrases say 15 minutes.

CCOHS advice:

- 5 minutes for non-irritant or mild irritant
- 15-20 minutes for irritant or serious irritant
- 30 minutes for most corrosives
- 60 minutes for strong alkalies (e.g. sodium hydroxide)

GHS

- Does not recommend a flush/rinse duration

Supplemental Instructions



Supplemental Instructions



- What is meant by "reference to supplemental instructions" in the GHS Precautionary Statements?
- Is the supplemental instructions P statement required if you don't have anything to add?
- When should antidotes be listed?

Supplemental Instructions

What is meant by "reference to supplemental instructions" in the GHS Precautionary Statements?

- Advice that is supplemental to, or beyond, advice contained in the P statements

General Examples

- Specific cleansing agent
- Antidotes
- Administration of emergency oxygen

Supplemental Instructions

Specific Examples

- Cyanides
- Hydrofluoric acid
- Phenol
- Organophosphates/Carbamates
- Cyanoacrylates
- Methanol
- Toxic gases which compromise the body's use of oxygen (cyanides, carbon monoxide, hydrogen sulfide)
- Lithium, sodium, potassium

Supplemental Instructions



- Must be appropriate for first aid providers
- Often require specialized training
- Often require specialized materials (e.g. antidotes, cleansing agents)
- Important to inform emergency responders and local hospital

Supplemental Instructions

Is the supplemental instructions P statement required if you don't have anything to add?

It is not.

- Specific treatment is urgent (see ... on this label). (P320)
Conditions for use:
If immediate administration of antidote is required.
- Specific treatment (see ... on this label). (P321)
Conditions for use:
If immediate administration of antidote is required.
If immediate measures such as specific cleansing agent is advised.
If immediate specific measures are required.

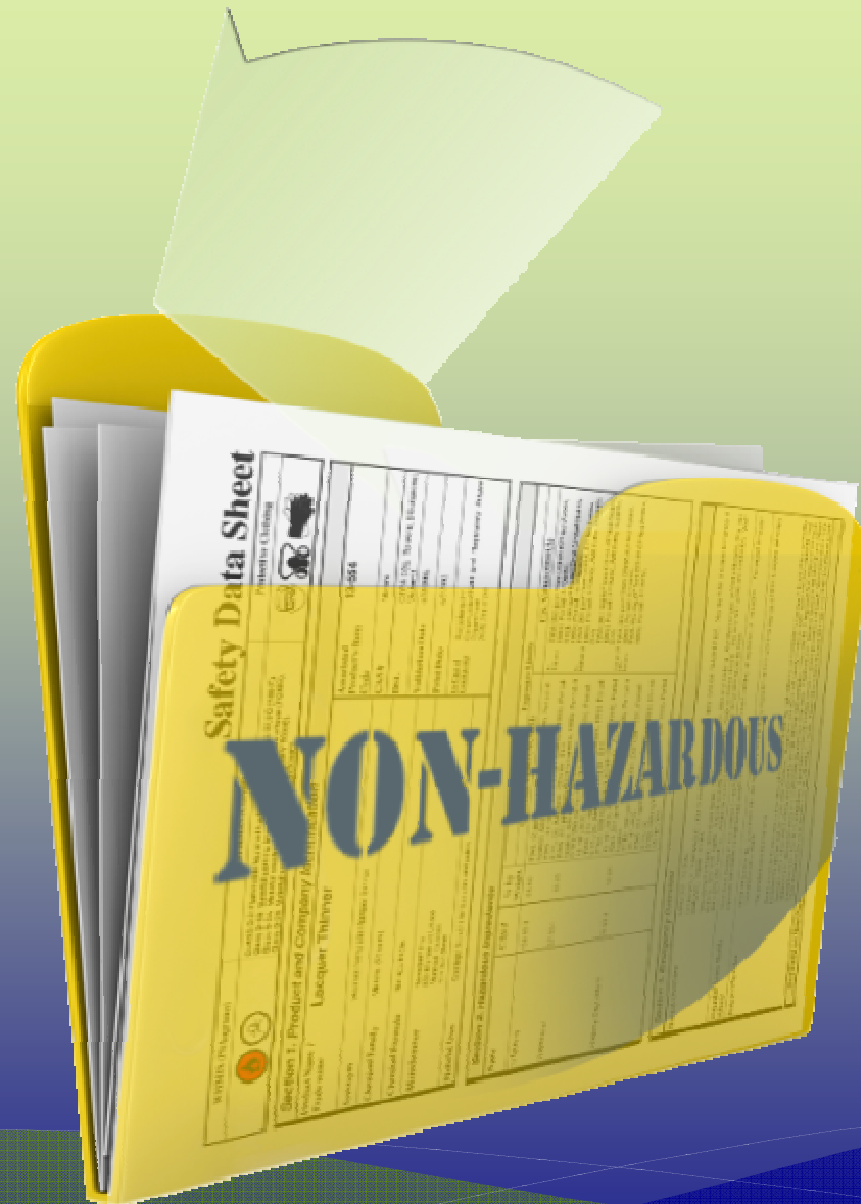
Supplemental Instructions



When should antidotes be listed?

- Antidotes are the exception not the rule
- Very few antidotes are appropriate for first aid providers to administer
- Scientific literature must support efficacy and appropriateness as a first aid practice

Advice for Non-Hazardous Products



Non-Hazardous Products



- Is it appropriate to include blanket statements when there are no required statements? If so, what are your suggestions?
- If a product is considered non-hazardous, what first aid should be given that would not contradict the non-hazardous classification?

Non-Hazardous Products



My Suggestions

- Not applicable
- None required
- If you feel unwell or are concerned, obtain medical advice

Resources



Resources

- The Safety Data Sheet – A Guide to First-Aid Recommendations, CCOHS

Free online version available at:

www.ccohs.ca/products/publications/firstaid/

- American Heart Association and American Red Cross Guidelines (updated every 5 years; 2015 update soon!)
- American Academy of Clinical Toxicology and European Association of Poison Control Centres and Clinical Toxicologists Position Statements

Resources



- Goldfrank's Toxicologic Emergencies
- ATSDR Medical Management Guidelines (MMGs)
- IPCS/CEC Evaluation of Antidotes Series
- Primary Literature

Thank You

For further information:

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905-570-8094

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