STUDENT SAFETY SHEETS 80

Alkali metals

includes **Lithium, Sodium & Potassium**

Substance	Hazard	Comment
Lithium Solid	 HIGHLY FLAMMABLE  CORROSIVE	It reacts rapidly with water to produce hydrogen, an extremely flammable gas (see *Sheet 50*). Although difficult to ignite, once lit, it burns readily in air and is difficult to extinguish. It causes burns. Contact with moisture produces lithium hydroxide which is irritant to the skin and eyes. It reacts violently with many substances.
Sodium Solid		It reacts violently with water to produce hydrogen, an extremely flammable gas. It burns vigorously and is difficult to extinguish. It causes burns. Contact with moisture produces sodium hydroxide which is corrosive (see *Sheet 31*). It reacts violently with many substances.
Potassium Solid		It reacts very violently with water to produce hydrogen, an extremely flammable gas. It burns vigorously and is difficult to extinguish. It causes burns. Contact with moisture produces potassium hydroxide which is corrosive (see *Sheet 31*). It reacts violently with many substances. Over a period of years, it may develop a coating of yellow superoxide. Under slight pressure, eg, from a knife blade, this may explode.

Typical control measures to reduce risk

- Store alkali metals under liquid paraffin. Check potassium samples regularly for signs of yellowing.
- Handle sample using forceps, wear eye protection and use safety screens.
- Conduct all investigations on a small scale - generally use a rice grain-sized piece.
- Make sure everybody involved (eg, technicians clearing away) understands the hazards.
- Take steps to prevent theft.

Assessing the risks

- ***What are the details of the activity to be undertaken? What are the hazards?***
- ***What is the chance of something going wrong?***
  Eg, Could molten, corrosive metal spit out of a container?
- ***How serious would it be if something did go wrong?***
  NB There are occasional reports of pupils being taken to hospital (for treatment to cuts or as a result of chemical splashes) as a result of explosions of apparatus involving sodium.
- ***How can the risk(s) be controlled for this activity?***
  Eg, Can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

- **In the eye** — Flood the eye with gently-running tap water for at least 20 minutes. See a doctor. If it is necessary to go to hospital, continue washing the eye during the journey in an ambulance.
- **Swallowed** — Do no more than wash out the mouth with water. Do **not** induce vomiting. Sips of water may help cool the throat and help keep the airway open. See a doctor.
- **Spilt on the skin or clothing** — Remove any pieces of solid with forceps. Then drench the skin with plenty of water. If a large area is affected or blistering occurs, see a doctor.
- **Metal catches fire** — For sodium and potassium, smother with dry sand, anhydrous sodium carbonate or mineral absorbent (eg, cat litter). For lithium, smother with dry sodium chloride.
- **Spilt on the floor, bench, etc** — Scoop up as much metal as possible into a dry container. Cover the area with dry sand or anhydrous sodium carbonate (or, for lithium, sodium chloride) and scoop into a dry bucket for further treatment. Rinse the area with plenty of water and mop.