



AN ASSESSMENT OF HEALTH RISKS ASSOCIATED WITH A SCHEME OF WORK (PROCEDURE) Control of Substances Hazardous to Health (COSHH) Regulations 2002

This form is an aid to the assessment of hazards associated with the use of chemicals and the subsequent application of suitable controls. Separate forms are available for assessment of:

- Risks associated with biological agents or ionizing radiation
- Risks associated with flammability and explosion arising from large scale operations where hazard zoning is necessary ([The Dangerous Substances and Explosive Atmospheres Regulations](#) apply)

This form can be used for flammable or explosive substances for small scale operations without hazard zoning, or where the risk of fire or explosion is deemed to be trivial.

Person Conducting This Assessment

Name:	R A Peterborough	Date of Assessment:	08/06/2010
Position:	H&S Advisor	Reference Number:	RAP14-080610

Person Actually Carrying Out the Work

Name:	Various
Position:	Crime Scene and Vehicle Examiners

The Activity or Procedure

Title of Work:	Development of Latent Fingerprints with Aluminium Powder
Description of Work:	A small amount of aluminium powder is loaded onto a fingerprint brush by inserting bristles into a small pot containing the powder. Any excess powder is returned to the pot by gently tapping the brush on the inner surface of the pot. If a Zephyr brush is used, it is twizzled (rotated) close to the surface being examined. If a squirrel hair brush is used, the brush is passed back and forth over the surface. Whatever the brush, the powder is deposited onto the sticky latent fingerprints, and the prints are revealed as a silvery mark. It is important to minimise the formation of clouds of the dust, but such formation cannot be prevented entirely.
Location of Work:	Various
Frequency of the Work:	Daily

Complete this Box ONLY if the Procedure requires Review by Occupational Health (see Part 1C)

Name:		Date of Review:	
Has the review been documented?	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	

FINAL APPROVAL (Senior Health and Safety Manager or Other Designated Person)

Name:	R D Peters SSM	Date of Approval:	18/06/2010
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SECTION 1 – HAZARDS AND RISKS

PART 1A – Evaluation of Hazards and Risks

Use Table 1.1 to assign a risk level (score) for each chemical used in the procedure and listed in Table 1.2

Table 1.1 – Risk Matrix

A: Hazard Risk Phrases (see MSDS)	B: Substance is Volatile or Dust Forming	C: Quantity	Score
Low Risk R36, 38, 36/38 R66, 67	Low Risk Liquids: Boiling point is above 150 Celsius Solids: Granular solids that do not readily fragment or form any appreciable amount of dust	Below: 1 gram (1 ml)	1
Medium Risk R20, 21, 22 20/21, 20/22, 21/22 20/21/22 R34, 35, 36/37, 37/38 36/37/38 R41, 48/20, 48/22, 48/25 48/20/21, 48/20/22 48/20/21/22 R65	Medium Risk Liquids: Boiling point is between 50 and 150 Celsius Solids: Small crystalline or granular solids that fragment to form little dust or a dust that settles rapidly	Between: 1 and 100 g (1 and 100 ml)	2
High Risk R1 to R19 R23, 24, 25, 26, 27, 28 R23/24, 23/25 R24/25, 26/28, 27/28 R23/24/25, 26/27/28 R39, 39/23/24/25 R42, 43, 45, 46, 47, 48, 49 R42/43, 48/23 R48/23/24, R48/23/25	High Risk Liquids: Boiling point is below 50 Celsius Solids: Fine or light powders, or dusts that can form airborne clouds and may remain so dispersed for several minutes NOTE: R1 to R19: Additional assessment under Part 5.2.D to J of the DSEAR applies for large scale processes.	Above : 100 g (100 ml)	3

How to Use the Risk Matrix and Assign a Risk Level

Risk Phrase:	If a chemical has more than one risk phrase, use the phrase with the highest risk	
Quantity:	Include the quantity in the stock bottle kept or used in the vicinity of the procedure	
Score:	<ol style="list-style-type: none"> For each substance, assess the score for each of the Headings, A, B and C Multiply the score for each of A x B X C to obtain the Risk Level for that substance 	
Overall Risk Levels:	Low:	Less than or equal to 8
	Medium:	Between 9 and 12
	High:	Above 12

Table 1.2 – Chemicals Used in the Procedure

Name	CAS No.	Exp. Routes	Risk Phrases	Exp. Lev.	Score A	Score B	Score C	Risk	
								AxBxC	Level
Aluminium Powder	7429-90-5	SEIO	10, 15	10	3	3	2	18	H

How to Use Table 1.2

Name	Use either trivial or IUPAC nomenclature; e.g., Cyclohexane
CAS No.	Give the Chemical Abstract Service registry number, e.g., 110-82-7
Exp. Routes	Give possible routes of exposure; S (skin), E (Eyes), I (Inhalation), O (oral) Injection or penetration of the skin is not to be expected in normal operations
Risk Phrases	Obtain these from the material safety data sheet (MSDS)
Exp. Level	Exposure Levels. If these have been assigned (see the MSDS) exposure levels can be given as Occupational Exposure Levels, or Standards (OELs or OESs), or Maximum Exposure Limits or Levels (MELs). For solids, these are typically in mg/m ³ , and for liquids, in ppm (parts per million)
A, B, C	A : Hazard Score, B : Volatility/Dust Score, C : Quantity Score Enter a value of 1 for each of A, B and C unless other values are obtained using Table 1.1
Risk Level	Insert appropriate letter code: L (Low - ≤ 8), M (Medium – 9 - 12), H (High > 12)

Part 1B – Evaluation of Factors Affecting Risk

The manner in which hazardous substances are used in a process affects their potential risk. This Part lists possible Modes of Use for the process. Check those which are encountered in the process.

1. Modes of Use

Weighing	<input type="checkbox"/>	Pipetting	<input type="checkbox"/>	High Pressure	<input type="checkbox"/>
Pouring	<input type="checkbox"/>	Titrating	<input type="checkbox"/>	High temperature	<input type="checkbox"/>
Filtration	<input type="checkbox"/>	Sharps	<input type="checkbox"/>	Centrifuging	<input type="checkbox"/>
Other	Dusting with soft fibre brushes; typically glass fibre (Zephyr) or squirrel brushes				
Other					

Part 1C – Evaluation of People at Risk to Exposure

Some groups of people are more susceptible to hazardous substances than others. This Part identifies additional factors that need to be addressed in evaluating risks.

1. Factors Affecting Sensitisation, Genetic Damage or Inducement of Cancer

Are any of the substances used in the process assigned Risk Phrases R42, R43, R45, R46, R47, R48, or R49 **AND** Assessed as High Risk in Table 1.1?

Yes:	<input type="checkbox"/>	If YES, this assessment must be reviewed by Occupation Health before the process can be approved. Details of the person who makes this review must be entered on page 1 of this form. Any additional comments made by Occupational Health must be appended to this form.
No:	<input checked="" type="checkbox"/>	

2. Factors Affecting Women of Child Bearing Age

Are any of the substances used in the process assigned Risk Phrases R61, R63, or R64?

Yes:	<input type="checkbox"/>	If YES, this assessment must be reviewed by Occupation Health before the process can be approved. Details of the person who makes this review must be entered on page 1 of this form. Any additional comments made by Occupational Health must be appended to this form.
No:	<input checked="" type="checkbox"/>	

3. Factors Affecting People Who Wear Contact Lenses

Are any of the substances used in the process likely to increase risk to people with contact corrective vision? If YES, give details.

Yes:	<input checked="" type="checkbox"/>	Dust entering the eye through accidental exposure may be more difficult to remove if wearing contact lenses.
No:	<input type="checkbox"/>	

4. Factors Affecting People in the Vicinity of the Operation

Are any other people not directly involved in the process likely to be at risk from exposure? Examples: Maintenance workers, Cleaners, Office staff, the public. If YES, give details.

Yes:	<input checked="" type="checkbox"/>	Any other person in the vicinity of the work could inhale any dust particles that are formed in the dusting of fingerprints.
No:	<input type="checkbox"/>	

Part 1D – Substances Covered By Other Legislation

Some chemical substances are covered under legislation other than COSHH.

1. Chemical Weapons Act (1996)

Are any of the substances used in the process subject to the CWA? The list of toxic chemicals and their precursors is given in the Schedule of the Act at http://www.opsi.gov.uk/Acts/acts1996/ukpga_19960006_en_4#sch1. If YES, give details.

Yes:	<input type="checkbox"/>
No:	<input checked="" type="checkbox"/>

2. The Dangerous Substances and Explosive Atmosphere Regulations (2002)

Are any of the substances used in the process subject to the DSEAR? If so, give details. Further assessment is needed.

Yes:	<input checked="" type="checkbox"/>	Aluminium powder is Highly Flammable (=R11) but NOTE - MSDS cites only R10 (Flammable) and R15 (contact with water to yields Highly Flammable gas. However, quantities in use at any moment are trivial, and not likely to yield a significant dust cloud, or fire hazard. Evaluation of risk to health can therefore be captured in this assessment.
No:	<input type="checkbox"/>	

3. Anti Terrorism, Crime and Security Act (2001)

Are any of the substances used in the process subject to the ATCSA? The list of substances is given in Schedule 5 of the Act at http://www.opsi.gov.uk/acts/acts2001/ukpga_20010024_en_18#sch5. If YES, give details.

Yes:	<input type="checkbox"/>
No:	<input checked="" type="checkbox"/>

4. Controlled Drugs or Drugs Precursors

Are any of the substances used in the process listed as controlled drugs or Drugs Precursors under various Misuse of Drugs Legislation? If YES, give details.

- <http://www.homeoffice.gov.uk/publications/drugs/drug-licences/controlled-drugs-list?view=Binary>
- <http://www.incb.org/pdf/e/list/red.pdf>
- <http://www.homeoffice.gov.uk/publications/drugs/drug-licences/ecfeb04?view=Binary>
- <http://www.homeoffice.gov.uk/publications/drugs/drug-licences/wallchart-march-2010?view=Binary>

Yes:	<input type="checkbox"/>
No:	<input checked="" type="checkbox"/>

Part 1E – Other Hazards Covered By Other Means of Assessment

Some hazardous substances (e.g., lead, asbestos, pathogens, genetically modified organisms), and processes (e.g., ionising radiation, very high pressures or temperatures) are covered under other Regulations.

1. Hazards Other Than Those Covered by COSHH

If other hazards exist with the process, have these been separately assessed, and approved?
If YES, give details, including details of documentation / Reference Numbers.

Yes:	<input type="checkbox"/>
No:	<input checked="" type="checkbox"/>

SECTION 2 – CONTROL MEASURES

PART 2A – Preventing Exposure

This Part requires the assessor to demonstrate whether or not the process can be carried out with less hazardous materials and/or in an alternative manner to that outlined on the first page of this form.

1. Availability of Less Hazardous Substances

Can any other less hazardous substance(s) be used to substitute the hazardous substances listed in Table 1.2?
IF YES, explain why the substitution is not being made.

Yes:	<input checked="" type="checkbox"/>	Other powders are available for fingerprint development. However, on some surfaces, aluminium powder yields superior quality prints, an essential objective in recovering identifiable marks at a scene of crime. Other, less hazardous powders will be used in preference to aluminium powder where this is deemed appropriate.
No:	<input type="checkbox"/>	

2. Elimination of Hazardous Substances

Can any of the hazardous substance(s) listed in Table 1.2 be eliminated from the process?

IF YES, explain why the elimination is not being made.

Yes:

No:

3. Quantity of Hazardous Substances

Can the amount of any of the hazardous substance(s) listed in Table 1.2 be reduced in the process?

IF YES, explain why the reduction in quantity is not being made.

Yes:

No:

4. Amending the Process

Can the process be amended in any way to reduce or remove the potential for exposure to the hazardous substance(s)? IF YES, explain why the amendment is not being made.

Yes:

LEV could be used when powdering small, portable items (an exhaust bench), and certainly it is preferable to do so for the interior examination of vehicles where appreciable amounts of air-borne dust can be formed in the enclosed space. Use of LEV would otherwise be both cumbersome and impractical for most fixed surfaces in open building spaces.

No:

5. Measures to Exclude Non-Essential People

Will steps be taken to exclude non-essential people from the vicinity of the process in which the hazardous substances are being used? IF NO, explain why the exclusion is not possible.

Yes:

It is important to keep non-essential people away from the area being examined even though the risk to them is likely to be trivial. This action would mitigate for possible claim of injury caused by using aluminium powder.

No:

PART 2B – Controlling Exposure

This Part requires the assessor to demonstrate that measures are being taken to control exposure to hazardous substances including any that are formed during the process.

1. Keeping Hazardous Waste to a Minimum

Are the quantities of hazardous waste produced in the process, or stored nearby, kept to a minimum?

IF NO, explain why such a reduction is not being made.

Yes:

No:

2. Measures for Containment and for Preventing Release of Hazardous Substances

Does the process need to be either partially or completely enclosed or contained (e.g., fume cupboard, condenser, screen)? IF NO, explain why not, and then proceed to 4, below.

Yes:

No:

3. Type of Containment for Controlling Release of Hazardous Substances

Check any of the following which are needed to contain or control exposure. Give details of the type and location.

Fume Cupboard:	<input type="checkbox"/>	
Glove Box:	<input type="checkbox"/>	
Water-cooled Condenser:	<input type="checkbox"/>	
Explosion Screen or Cage:	<input type="checkbox"/>	
Other:	Extraction table or other LEV especially for vehicle examination	
Other:		

4. Sources of Ignition

Do measures need to be taken to control sources of ignition?

IF YES, explain what measures need to be taken.

Yes:	<input checked="" type="checkbox"/>	Ignition temperature exceeds 230 Celcius (dust layer) and there is a risk of dust explosion. Protect against build up of dust layers and possible electrostatic discharge.
No:	<input type="checkbox"/>	

5. Dealing with Waste Substances

Are any hazardous waste materials or products produced in the procedure?

IF YES, provide details of how waste will be disposed

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
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WASTE SUBSTANCES	TO SPECIALIST CONTRACTOR	TO DRY BIN	TO WET DRAIN	TO OTHER (E.G., SHARPS) (GIVE DETAILS)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6. Personal, Protective Equipment (PPE)

Check any of the following items of PPE required to reduce exposure or other risks.

Give details of particular types of PPE.

Mask:	<input checked="" type="checkbox"/>	Recommend close-fitting dust mask; filter minimum Class P2; Better is P3, with exhalation valve.
Disposable Gloves:	<input checked="" type="checkbox"/>	Disposable cotton gloves
Goggles:	<input checked="" type="checkbox"/>	Not essential, but should be made available, especially to those who wear contact lenses
Laboratory Coat:	<input type="checkbox"/>	
Coverall:	<input checked="" type="checkbox"/>	Scene suit
Footwear:	<input type="checkbox"/>	
Other:		
Other:		
Other:		

7. Personal Hygiene

Identify which of the following instructions are given to deal with exposure to the hazardous substances.

Do NOT eat or drink whilst carrying out the procedure:	<input checked="" type="checkbox"/>
Do NOT smoke whilst carrying out the procedure:	<input checked="" type="checkbox"/>
Wash hands before using the toilet:	<input checked="" type="checkbox"/>
Wash hands after completing the procedure:	<input checked="" type="checkbox"/>
Wash hands before eating/drinking/smoking:	<input checked="" type="checkbox"/>
Dispose of disposable work wear in the waste package provided for this purpose:	<input checked="" type="checkbox"/>
Return all protective clothing to stores for laundering:	<input type="checkbox"/>
Use an on-site shower after completing the procedure:	<input type="checkbox"/>
Store personal clothing in the on-site facilities provided:	<input type="checkbox"/>
Other (describe):	

PART 2C – Storage and Transportation

This Part requires the assessor to demonstrate that measures are being taken to control exposure to hazardous substances during storage or transportation.

1. Storage

State what types of storage are used for the hazardous substances listed in Table 1.2.

HAZARD TYPE	TYPE OF STORAGE
Toxic; Very Toxic:	
Corrosive:	
Flammable; Highly Flammable ; Extremely Flammable:	Main store: cool, dry store in tight-closed plastic containers. Incident vehicle: in dry, screw-capped plastic bottles. Fingerprint kit: in dry, screw capped plastic bottle. No water, peroxide or other incompatible chemicals.
Dust:	Dust hazard. Storage described above.
Other:	

2. Transportation ON-Site

Are any of the hazardous substances listed in Table 1.2 transported **on-site** as part of the process?

If YES, give details of how containment will be ensured.

Yes:	<input checked="" type="checkbox"/>	From store to incident vehicle. Powder is contained in labelled, plastic bottles as supplied.
No:	<input type="checkbox"/>	

3. Transportation OFF-Site

Will any of the hazardous substances listed in Table 1.2 need to be taken **off-site** to be used as part of the process?

If YES, give the details below.

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
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	Name of Substances:	Quantity:	How Contained:
1	Aluminium powder	100 g	Screw-capped plastic bottle
2			
3			
4			
5			

Mode of Transport: Incident vehicle or fingerprint kit

Where Used: Various - all are scenes of crime

SECTION 3 – MONITORING of CONTROL MEASURES

This Part requires the assessor to demonstrate, where necessary, how levels of exposure to hazardous substances used or created in the process are being monitored.

1. The Need for Monitoring?

Is it necessary to monitor exposure to hazardous substances in the procedure to validate whether the control measures are working? If YES, how (e.g., air sampling), and how often? If NO, give reasons.

Yes:	<input type="checkbox"/>	
No:	<input checked="" type="checkbox"/>	Powder is used intermittently though frequently in many and varied locations. Continuous monitoring is considered impractical. Use of a face mask of the type recommended and other specified PPE is sufficient to minimise personal exposure. Daily examination of face mask and other PPE indicates efficacy of this control measure.

2. Maintenance of Containment

Is the type of containment or control stated in Part 2B.3 “*Type of Containment for Controlling Release of Hazardous Substances*” above subject to periodic maintenance or checks? If YES, give the following information:

Yes: No:

Method for Control:	Maintenance Required	Date of Last Maintenance	Person Responsible	Frequency of Checks
Fume Cupboard:	<input type="checkbox"/>			
Glove Box:	<input type="checkbox"/>			
Water-cooled Condenser:	<input type="checkbox"/>			
Explosion Screen or Cage:	<input type="checkbox"/>			
Other (give details):	Maintenance Required	Date of Last Maintenance	Person Responsible	Frequency of Checks
	<input type="checkbox"/>			
	<input type="checkbox"/>			

SECTION 4 – DEALING WITH UNFORESEEN EXPOSURE OR INCIDENTS

This Part requires the assessor to describe the steps to be taken in the event of uncontrolled or unexpected exposure to hazardous substances. Assessor: Do NOT “cut and paste” directly from MSDS. Instead, think carefully about what must ACTUALLY be done in the event of an unforeseen event.

1. Personal Exposure

State the medical or other treatment needed in the event of the following forms of uncontrolled exposure:

Inhalation of fumes or dusts:	Give fresh air. Consult doctor if respiratory discomfort persist.
Splashes to the eyes:	Rinse with running water for several minutes. Consult a doctor if discomfort persists.
Splashes to the skin:	Wash with soap and water.
Ingestion:	If discomfort develops or persists, consult a doctor.

2. Shutdown of Equipment

Is there a prescribed procedure for terminating the process or for shutting down equipment / machinery etc?
If YES, describe the procedure.

Yes: No:

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3. Dealing with Spillages

Describe the procedures to be adopted in the event of a spillage or unforeseen release.

In an open room:	Sweep up spillage and dispose of in dry waste container. Do NOT use a vacuum cleaner except for small quantities (< 1 g). Do NOT leave sweepings in a damp environment. Treated surfaces can, where possible, be cleaned with wet wipes, or warm, soapy water.
In a containment facility (if appropriate):	
Off-Site (if appropriate):	As above.

4. Dealing with Fire

In case of fire, what type of extinguisher or other means of fire suppression should be used to minimise release of hazardous substances? Comments on any special precautions.

Foam Extinguisher:	<input type="checkbox"/>	Us ONLY dry powder or sand to extinguish flame. Do NOT use water or water-containing extinguishers.
Water Extinguisher:	<input type="checkbox"/>	
CO ₂ Extinguisher:	<input type="checkbox"/>	
Dry Powder:	<input checked="" type="checkbox"/>	
ABC Powder:	<input type="checkbox"/>	
Sand:	<input checked="" type="checkbox"/>	

SECTION 5 – PERSONNEL CONSIDERATIONS

1. Working Alone or Overnight

Is an individual permitted to work alone or overnight during this procedure? If YES, give details of any particular conditions, if any, that must be met (e.g., signing a log book, informing security).

Yes: No:

Conditions: None

Check this box if there are NO Special Conditions:

2. Training and Instruction

Is any particular training or instruction necessary before this procedure can be performed? Is supervision needed? If YES, give details.

Yes: No:

Attendance at in-house or NTC Crime Scene and Vehicle Examiner Training Course. Peer working for new CSEs/VEs. Method Information sheet and HOSDB Manual. Supervision not necessary.

3. Emergency Contact

Give the telephone Number of the Health and safety Office or other responsible contact

Landline:

Mobile:

Use this page to add any further comments, if necessary

SAFETY DATA

1. ECKART MSDS

2. Additional Information on the Health and Safety of the Aluminium Powder is available from the supplier (Eckart) at http://www.eckart.net/fileadmin/webdata/documents/Safety_Instructions_GDA.pdf

TOXICITY

http://www.castleviewuk.com/example_coshh_assessment_-_step_2.html

No toxicity data in MSDS. However, aluminium and its salts have long been implicated as toxic in all manner of human health disorders. The list includes Blood - Microcytic anemia (decreased red blood cells or haemoglobin), Bones - Osteomalacia or aplastic bone disease (associated with painful spontaneous fractures, hypercalcemia, tumorous calcinosis), Brain/Central Nervous System - Alzheimer's Disease, Lou Gehrig's Disease (amyotrophic lateral sclerosis), Parkinson's disease, and Encephalopathy (stuttering, gait disturbance, myoclonic jerks, seizures, coma, abnormal EEG), Eyes - Conjunctivitis, local tissue destruction, Heart - Increased left ventricular mass and Decreased myocardial function, Lungs - Irritation of the upper respiratory system (via hydrolysis-liberated acid), Pulmonary fibrosis (reduced lung function), Muscles - Proximal myopathy (muscle weakness; muscle atrophy), Skin - Allergy, Eczema, and Dermatitis, and Other - Glucose intolerance, increased risk of infection. In short, aluminium can collect in blood serum, brain, muscle and bone, and is a suspected contributor to many disorders (2). Whether aluminium is carcinogenic (cancer forming) is not known, but aluminum has not been shown to cause cancer in animals (3).

There is no definitive scientific paper addressing the toxicity of aluminium powder, and despite elements of strong evidence, there remains significant debate about the contribution aluminium (as its salts) makes to human health issues.

Exposure by inhalation appears to be the most significant route in this process. The proper use of the recommended PPE should mitigate for such exposure.

FIRE and EXPLOSION

Even though aluminium powder applied in the process described on page 1 is seen to be a HIGH RISK substance (Table 1.2), it is typically only used in small quantities at any one scene. Moreover, the examiners are aware that they must minimise the formation of dust clouds, keep sources of ignition away from the working areas, and maintain the powder in a dry environment. For these reasons, the risk of fire or explosion is deemed to be trivial.