Appendix A Designated Substance Assessment Form

RECORD OF DESIGNATED SUBSTANCE ASSESSMENT

SUBSTANCE:	Lead (Balls)
DATE REVIEWED BY JHSC:	

COMPANY: McMaster University

DEPARTMENT OPERATIONS:
Mechanical Engineering

LOCATION(S):
John Hodgins Engineering Building Room No. 108

ASSESSMENT PREPARED BY:

Dr. Michael Bruhis

JOB TITLE:

Research Engineer

DATE PREPARED: Jun 11, 2009

APPLICATION – WORKSHEET 1: IS THE DESIGNATED SUBSTANCE PRESENT?

1. Do any material safety data sheets from your suppliers indicate the presence of the substance?

YES [X] NO [ ]

2. If substance is present, indicate the department where it is used, nature of the use (i.e. Direct or Indirect) and the quantity used per month or year:

Product Name	Department	How Used? Direct/Indirect	Quantity Per Month/Year
Lead Balls	Mechanical Engineering	Direct	Approx. 25 lbs per month

CONCLUSIONS

Read statements and check applicable box:

[ ] Substance not present anywhere in workplace; regulation does not apply.
No Assessment needed. (**Note:** Although you do not need to proceed further, you should retain this worksheet on record. e.g. auditing purposes)

[X] Processes / activities have been identified where substance present.
Proceed to Worksheet 2.

APPLICATION – WORKSHEET 2: IS WORKER EXPOSURE LIKELY?

1. In what form does the substance enter the plant?

   Product title: Lead Balls

   Type of Container: Jute Sacks Size of Container: for 25 lbs

2. Is this form altered during use or in the operation? YES [X] NO [ ]

   If YES, indicate altered form:

3. Is there a possibility of the substance being released into the workspace environment during normal use? YES [X] NO [ ]

   If YES, indicate the stage of the operation or areas where this can occur:

   1. During filling of Die
   2. During compaction, residues may get left on the die surface
   3. During the transport of the compacted form for further analysis

4. If YES to Question 3, specify the job functions and approximate number of employees who might be exposed:

Job Function	**Number of Employees**
Die Filling, Compaction and further analysis	2-3

5. If YES to Question 3, indicate how workers could be exposed:

   Inhalation [ ] Ingestion [ ] Skin Absorption [ ]
   Skin Contact [X] Other _____

6. If NO to Question 3, is there a likelihood of escape due to leaks, accidents, etc.?

   YES [ ] NO [ ]

7. Are workers likely to be exposed? YES [X] NO [ ]

CONCLUSIONS

Are there any activities/situations where exposure by any route is likely?

YES [X] NO [ ]

If NO, no further action is necessary. Date completed _____

If YES, an assessment is necessary – **proceed to Section III**.

Note: If protection against exposure has been left up to some engineering control measure which can fail, or deteriorate for any reason, or to a work hygiene practice, an assessment is necessary – **Proceed to Section III**.

ASSESSMENT – WORKSHEET 3: PROCESS DESCRIPTION

NAME OF PROCESS: _____

Process Flow	Description	Likely Exposure Yes/No
1. Manual delivery to the die	Lead Balls are inserted into the die.	Yes
2. Transfer and Compaction	The lead balls are transferred and compacted in an electronically controlled press behind a plexiglass enclosure.	No
3. Ejection and further inspection	The compacted entity is ejected and removed by hand (wearing nitrile gloves) and further characterizaion is carried out.	Yes
N xx.		

ASSESSMENT – WORKSHEET 4: EXISTING CONTROLS

Process Flow Stage	Control Description	Problems/Recommendations
1	**Engineering Controls:** N/A **Work Practices:** The lead balls are inserted into the die cavity through the shoe + actuator system via a hopper. The hopper is filled with lead balls through a plastic jar which is handled manualy wearing nitrile gloves. **Hygiene Facilities and Practices:** 1. No Food or DRINK permitted in the laboratory 2. Hands should be properly washed **Training Information:** Refer to MSDS Sheets for lead **Personal Protective Equipment** 1. Disposable nitrile gloves 2. Lab Coat **Emergency Procedures/Equipment** **In case of a spill, the lab can be cleaned up maually by personnel wearing above mentioned personal protective equipment. All the waste is disposed of in a separate container used specially for bio-hazard waste.**	____ ____ ____ ____ ____

Process Flow Stage	Control Description	Problems/Recommendations
2	**Engineering Controls:** Hydraulic Press controlled electronically **Work Practices:** The lead balls are transferred to a suitable location within the die and compaction is carried out. The entire process is monitored by a camera. Also the setup is behind a plexi glass gate which has the safety feature of shutting down the entire operation if its left open.. **Hygiene Facilities and Practices:** No Food or DRINK permitted in the laboratory **Training Information:** 1. Refer to MSDS Sheets for lead. 2. Detailed operating instructions are available and followed. **Personal Protective Equipment** 1. Safety -glasses 2. Lab coat	____ ____ ____ ____ ____

	Emergency Procedures/Equipment **Manual override of the machine is available to stop it immediately**	_____

Process Flow Stage	**Control Description**	**Problems/Recommendations**
3	**Engineering Controls:** Hydraulic Press controlled electronically **Work Practices:** The lead compact is ejected from the die electronically and removed from the die surface manually using nitrile gloves. It is then put in a plastic bag and taken for further analysis. **Hygiene Facilities and Practices:** 1. No food or drink permitted in the laboratory 2. Hands should be properly washed at all times **Training Information:** 1. Refer to MSDS Sheets for lead 2. A knowledge of the operating software and a know-how of the electronic equipment is available to the personnel working on the setup. **Personal Protective Equipment** Safety-glasses, Lab coat and disposable nitrile gloves **Emergency Procedures/Equipment** **Manual override of the machine is available to stop the machine immediately**	_____ _____ _____ _____ _____

ASSESSMENT – WORKSHEET 4: EXISTING CONTROLS (cont.)

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ASSESSMENT – WORKSHEET 5: JOB EXPOSURE ANALYSIS

Process Flow Stage	Job Title	Total Number of Employees	Tasks Where Exposure Likely	Duration Hrs per Week	PPE Req'd to be Used
1	Research Enginner and students	2-3	Loading of lead balls into the jar that fills the hopper	3-4	Disposable nitrile hand gloves, safety glasses and lab coat
2	Research Engineer and students	2-3	During the transfer and compaction of lead balls within the die.	3-4	Disposable nitrile hand gloves, safety glasses and lab coat
3	Research Engineer and students	2-3	Ejection of the compacted entity from the die and its removal manually for taking it for further analysis.	3-4	Disposable nitrile hand gloves, safety glasses and lab coat

CONCLUSIONS

Jobs/tasks to be noted during walk-through survey:

1. No Food or DRINK permitted in the laboratory.
2. Appropriate place is allotted for the storage of the lead balls and also of the compacted entities.
3. Lab coat and disposable nitrile gloves that are used for handling of lead are not used for any other purpose.

ASSESSMENT – WORKSHEET 6: HEALTH EFFECTS

1. Any reported health effects? If so, describe.
   No

2. Any current Medical Program? If so, describe.

   No

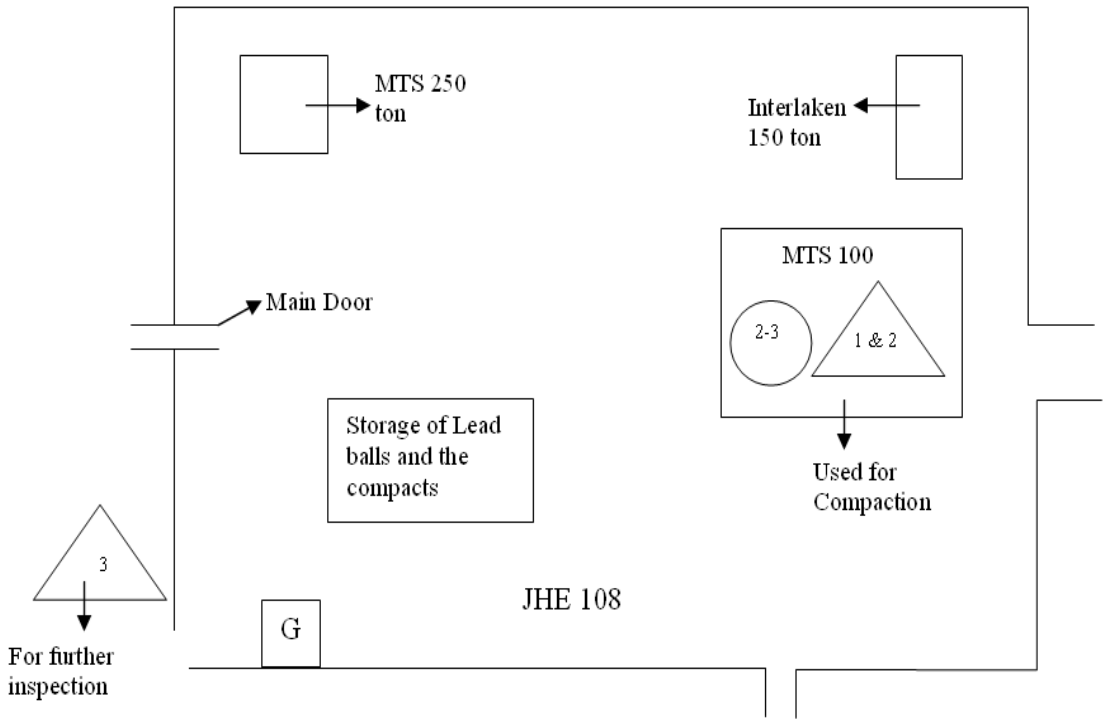
3. Previous exposure monitoring effects? If so, describe.

   No

CONCLUSIONS				
Health effects known at this stage:	YES		NO	X
Further information required:	YES		NO	X

ASSESSMENT – WORKSHEET 7: FLOOR PLAN

LOCATION: JHE-108 **DATE:** May 26, 2009



DIMENSIONS: L 40 W 20 H 18

4 WORK STATION – enter number from job title – Worksheet 5

5 EXPOSURE SOURCE – enter number from Process Flow – Worksheet 3

L VENTILATION – enter L for local exhaust and G for general ventilation.

ASSESSMENT – WORKSHEET 8: WALK THROUGH

Evidence of Contamination:

No

Hygiene Facilities and Work Practices:

1. No FOOD or DRINK permitted in the laboratory

2. Safety glasses and disposable nitrile hand gloves are used at all times.

3. Lab coats used exclusively for handling lead are available.

4. Secure storage is available for the material.

5. Lead does not change its state i.e. it remains solid at all times.

Ventilation Systems:
General

Storage Facilities:
Lead balls and compact are kept in locked cabinet when not in use.

ASSESSMENT – WORKSHEET 8: WALK THROUGH (cont.)

Dispensing Procedures:
1. Product is handled by only the authorized personnel at all times.

2. After use, the residual lead balls and the compacted entities are disposed of as hazardous waste in the proper containers.

3. Any hand gloves,lab coats, brushes, rags etc. coming in contact with lead are either cleaned thoroughly or disposed of in proper containers used for keeping bio-hazardous waste.

Housekeeping:

1. All equipment coming in contact with lead will be cleaned properly.

2. Containers of lead-containing waste will be kept tightly covered to prevent dust from becoming airborne.

3. Cleaning with compressed air or dry sweeping shall be avoided.

4. The entire open space will be cleaned taking necesaary precautions mentiones above. Extreme care will be taken to ensure no leakage of lead occurs in the form of dust or stray balls.

Personal Protective Equipment:
1. Disposable nitrile hand gloves

2. Disposable lab coats

3. Safety glasses

Emergency Facilities / Procedures:
1. The handling of lead is always done by authorized personnel.

2. Students always work under supervision.

3. In case of an emergency, the electronic equipment can be shut down by activating the manual override.

4. In case of any leakage to the environment, the lab will be vacated immediately and cleaned up while observing the above mentioned precautions at the same time.

ASSESSMENT – WORKSHEET 9: WALK THROUGH CONCLUSIONS

1(a). Were any areas found where controls are required or where existing controls may require improvement?

YES [ ] NO [X]

1(b). If YES, indicate the areas where the controls may be required or where existing controls may require improvement.

AREA	SUGGESTED IMPROVEMENTS

2(a). Personal exposure monitoring is required: YES [ ] NO [X]

2(b). If YES, indicate where:

3. Indicate any workers for whom medical testing and/or examinations may be required.

None

CONCLUSION – WORKSHEET 10: IS A CONTROL PROGRAM NECESSARY?

[ ]	CONCLUSION A: NO WORKER'S HEALTH MAY BE AFFECTED.
[X]	CONCLUSION B: A WORKER'S HEALTH MAY BE AFFECTED.

OVERALL CONCLUSION

A control program is necessary YES [ ] NO [X]

Improvements needed in existing program:
None

DATE: June 11, 2009 **SIGNED:** _____