Appendix A Designated Substance Assessment Form

RECORD OF DESIGNATED SUBSTANCE ASSESSMENT

SUBSTANCE:	Silica
DATE:	Jan 12, 2009

COMPANY: McMaster University, Department of Civil Engineering
DEPARTMENT OPERATIONS: Soils, Gravels and sands are handled and prepared for various tests in the geotechnical lab.
LOCATIONS: JHE 113A, 114, Outside JHE loading dock
ASSESSMENT PREPARED BY: Peter Koudys, Department of Civil Engineering, Ext. 24839
TITLE: Technician
DATE PREPARED: January 12, 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
Pottery clay	Civil Engineering	Direct use during Undergraduate labs. Material is molded, mixed cut, dried and compressed while being tested for its properties.	50 kg per year
Other clays, gravels, sands, and soils from various sites	Civil Engineering	Direct use during material prep and testing as above.	Up to 500 kg per year
Play Sand	Civil Engineering	Direct use during material prep and testing as above.	20 kg per year

CONCLUSIONS

Read statements and check applicable box:

[ ] Substance not present anywhere in the workplace; regulation does not apply

No Assessment needed

[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: Pottery Supply House Pottery Clay and None from other sources

   Type of Container: Pails, plastic bags, metal tubes Size of Container: Varies: 1 kg to 25 kg

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

   If YES, indicate the altered form: Material is subjected to any of the following. Mixing , molding, drying, wetting, pounding, sorting, washing, cutting, compacting, pouring

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

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

   Inhalation of dust while handling dry material or from dust created while cleaning up.

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

Job Function	Number of Employees
Material preparation and testing	1
Cleanup	

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

   Inhalation [x] Ingestion [ ] Skin Absorption [ ] Skin Contact [ ]

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: Preparing Samples for testing and cleanup

Process Flow	Description	Likely Exposure Yes / No
1. **Remove needed material from container**	Scoop, pour, grab by hand, or extract with hydraulic actuator.	No, if material is wet or a dust mask is used.
2. Divide material for making test samples or dying in oven	Pour or scoop loose material, cut or breakup solid material	No, if material is wet or a dust mask is used. Crushing and other dusty procedures to be performed outside on JHE loading dock.
3. Make samples	Cut samples to size, or place and compact in mold and extract, or mix material with water, or place in sieves.	No, if material is wet or a dust mask is used.
4. Place samples and test	Place sample in appropriate testing apparatus using a rubber membrane if needed, setup and test.	No, sample placing and testing does not produce dust
5. Remove sample, dry if needed and cleanup.	Sample removed and placed in bowl for drying or disposed of in garbage or returned to covered plastic pail. Equipment and benches are cleaned using a wet cloth, floors are cleaned with a wet mop.	No, if material is wet or a dust mask is used.

ASSESSMENT – WORKSHEET 4: EXISTING CONTROLS

Process Flow Stage	Control Description	Problems / Recommendations
	Engineering Controls:	
1 to 5	Use wet materials when possible, otherwise use a dust mask and try to prevent dust creation. Wear lab coat	Dust mask not used Have supply of masks readily available in lab
	Work Practices:	
5	Wash Hands and face	Hands not washed .

ASSESSMENT – WORKSHEET 5: EXISTING CONTROLS (cont.)

Process Flow Stage	Control Description	Problems / Recommendations
4	**Hygiene Facilities and Practices:** Wash hands and remove lab coat before leaving lab Sink in JHE 113A	N/A
2	**Training / Information:** **MSDS for silica and this assessment should be reviewed .**	N/A
	Emergency Procedures / Equipment: N/A	
	Personal Protective Equipment: Wear Safety Glasses, dust mask, and lab coat	

ASSESSMENT – WORKSHEET 6: 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	Technician or Students	1	Handling soils, sand, and gravel. Inhalation possible.	2	Wet material, use mask, safety glasses, and lab coat.
				2	Wash hands and face to prevent spreading dust.
CONCLUSIONS					
Jobs / tasks to be noted during walk-through survey: Availability of dust masks, lab coats and safety glasses					

APPLICATION – WORKSHEET 6: HEALTH EFFECTS

1. Any reported health effects? If so, describe.

   Silica dust may cause respiratory disease

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

   N/A

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

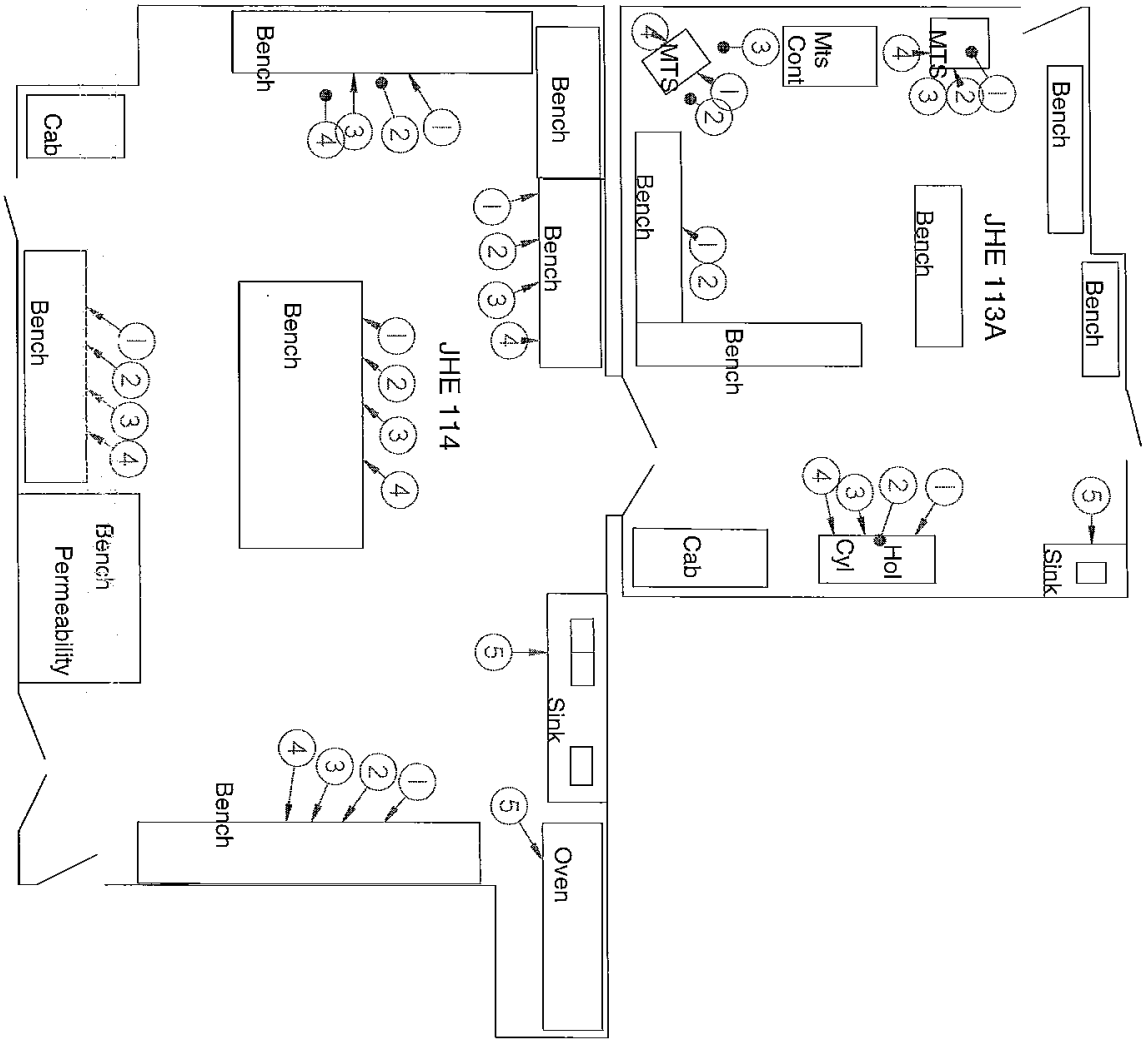
   EOHSS performed air sampling during sample preparation and resilient modulus testing of a dusty granular material. The sample preparation was typical of procedures which create the most dust. No detectable silica was found. Results of that testing are attached to this assessment.

CONCLUSIONS

Health effects known at this stage:	YES	[ ]	NO	[x]
Further information required:	YES	[ ]	NO	[x]

APPLICATION – WORKSHEET 7: FLOOR PLAN

LOCATION: **JHE 113A & JHE 114** **DATE:** Jan 12, 2009



DIMENSIONS: L **14 m** **W** **11 m** **H** **4 m**

- **O WORK STATION – enter number from job title – Worksheet 5**
- **) EXPOSURE SOURCE – enter number from Process Flow – Worksheet 3**
- **☐ VENTILATION – enter L for local exhaust, and G for general ventilation**

APPLICATION – WORKSHEET 8: WALK THROUGH

Evidence of Contamination:

None

Hygiene Facilities and Work Practices:

Sink available by west wall in JHE 113A and south wall in JHE 114
Safety glasses provided and dust masks provided.
Mop and wiping cloth provided.
.

Ventilation Systems:

General Room ventilation vents.

Storage Facilities:

N/A

APPLICATION – WORKSHEET 8: WALK THROUGH (cont.)

Dispensing Procedures:

Material obtained as required

Housekeeping:

No dry sweeping. Floor is cleaned with a wet mop and benches are wiped with a wet cloth.

Personal Protective Equipment:

Safety Glasses
Dust mask
Lab Coat

Emergency Facilities / Procedures:

N/A

APPLICATION – 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.

N/A

APPLICATION – WORKSHEET 6: HEALTH EFFECTS

[x] CONCLUSION A: NO WORKER'S HEALTH MAY BE AFFECTED

[ ] CONCLUSION B: A WORKER'S HEALTH MAY BE AFFECTED.

OVERALL CONCLUSION

A control program is necessary. YES [ ] NO [x]

Improvements needed in existing program:

DATE Jan 12, 2009 SIGNED _____

McMaster University
Occupational and Environmental Health Laboratory
1200 Main Street West
Health Sciences Centre, 3H58
Hamilton, Ontario, L8N 3Z5
Canada
Phone 905.525.9140, Ext. 22336
Fax 905.528.8860
Email oehl@mcmaster.ca
http://www.mcmaster.ca/oehl

May 13, 2008

Email: morinel@mcmaster.ca

Ms. Lisa Morine
McMaster Univeristy EOHSS
1280 Main Street West, WH 115
Hamilton ON L8N 3Z5

Dear Ms. Morine:

I enclose the laboratory report for the samples you submitted for analysis.

The samples were received in the laboratory on April 23, 2008 in acceptable condition. They consisted of one PVC filter sample and one blank for analysis of respirable silica (α-quartz). The blank value has been subtracted from the reported results. The analysis was completed on May 12, 2008.

Please note that any unused portions of the sample which are feasible to preserve will be kept for a period of 30 days from the date on this report and then discarded, unless you have requested otherwise.

If you require any additional information, please feel free to contact the laboratory. Thank you for the opportunity to provide you with our services.

Yours sincerely,

Lorraine Shaw, B.Sc., CIH, ROH
Laboratory Manager

LS/lb
enclosure

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ACCREDITED LABORATORY AIHA Industrial Hygiene See aihaldpp.org for details

McMaster University
Occupational and Environmental Health Laboratory
1200 Main Street West
Health Sciences Centre, 3H58
Hamilton, Ontario, L8N 3Z5
Canada
Phone 905.525.9140, Ext. 22336
Fax 905.528.8860
Email oehl@mcmaster.ca
http://www.mcmaster.ca/oehl

REPORT OF RESULTS

May 13, 2008

Email: morinel@mcmaster.ca

Ms. Lisa Morine
McMaster Univeristy EOHSS
1280 Main Street West, WH 115
Hamilton ON L8N 3Z5

The samples were received in the laboratory on April 23, 2008 in acceptable condition. They consisted of one PVC filter sample and one blank for analysis of respirable silica (α-quartz). The blank value has been subtracted from the reported results. The analysis was completed on May 12, 2008.

Laboratory Sample No.	*Your Sample Identification*	*Air Volume (l)*	*Respirable Silica (α-quartz)*	
			(mg)	*(mg/m^3)*
08040588	YW 23	268.8	< 0.005	-
08040589	YW 13 Blank	-	< 0.005	-

Method: Infrared Spectrophotometry, NIOSH Method 7602 (with modifications)

Detection Limit: 0.005 mg/sample

Analytical Precision: $S_r = 0.20$ @ 0.005 mg quartz per sample

Analyst: Shari-Ann McCollin, B.Sc.
Research Assistant

Reviewed and Approved by: Lorraine Shaw, B.Sc., CIH, ROH
Laboratory Manager

The results in this report apply only to the samples received and tested by the Occupational and Environmental Health Laboratory, McMaster University. This report shall not be reproduced, except in full.
/lb

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ACCREDITED LABORATORY AIHA Industrial Hygiene See aihalap.org for details

AIR SAMPLING REPORT

SILICA

CIVIL ENGINEERING

Introduction:

Air sampling was conducted in JHE-114 and 113A to determine the level of exposure to respirable amounts of crystalline silica measured during a specific routine handling process involving this designated substance.

Based on the levels of silica present in the sample controlled can be recommended and if necessary a control program put in place as per Regulation 845. Request for testing was initiated by Peter Koudys.

Sampling:

Sampling was conducted on April 23, 2008 in the presence of Peter Koudys, Prof Guo and Justyna Derkach as certified worker representative for the Faculty of Engineering Safety committee

The sampler used was an Airchek 224-PCXR4 and was placed on Prof Guo with the sampler in the breathing zone.

The experiment was conducted while wearing the sampler for a time period recommended by the Occupational and Environmental Health Laboratory.

After sampling was completed the sampling cartridge along with a blank cartridge was delivered to the lab for analysis.

The results of the sampling indicate there was no level of respirable silica detectable during this experimental process and as such a control program is not required in this area. (See report)

Should this process change sampling would need to be conducted again to ensure there is no exposure to the worker.

If you have any further questions on this report please contact me directly at ext. 23314.

Thank you

Lisa Morine