ASBESTOS GASKETS

WINNIPEG Air Testing

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ASBESTOS GASKETS

- Used extensively to prevent leakage between solid surfaces
- Many older gaskets may contain asbestos
- Gaskets are generally non-friable

LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
A1241076 Homogeneous,	GASKET Grey, Black, Fibrous, Bound CHRY 75% BIND 25 %	CHRY 75%

- Copy of Lab result from gasket

GASKET REMOVAL

- Gaskets are typically removed by the use of simple scraping
- Putty knife or other hand tool used to lift gasket and clean surface

EXPOSURE DURING REMOVAL

- Testing for airborne asbestos during removal of gasket
- Published in scientific journals
- Tests performed by qualified individuals
- Analysis at accredited laboratories

STUDY 1

- American Occupational Hygiene Journal (1996)
- Tests performed on different types of gaskets)
- (sheet/plate gaskets, spiral wound gaskets and metal jacketed gaskets
- Included gaskets that than could be removed easily and without breaking and more difficult gaskets
- Eleven tests done under real work conditions
- Gaskets were wet prior to removal
- Exposures ranged from 0.04 – 0.24 f/cc

- Conclusion: exposure less than 0.3 f/cc …. BUT

FIBER IS A FIBER

- These results count total fibers
- PCM counts any and all fibers that meet the length and aspect ratio
- So these numbers include non-asbestos fibers

- TEM can detect and count only asbestos fibers
- Not used much because it is very expensive

- Air samples run again using TEM that counts only asbestos fibres

REVISIT THAT DATA

Total fibers	Only Asbestos Fibers
0.068	not detectable
0.242	0.0012
0.098	ND
0.042	ND
0.042	ND
0.093	ND
0.051	0.0014
0.056	0.0008
0.052	0.0007
0.051	ND
0.141	ND

STUDY 2

- Cheng and McDermott (1991)
- Tested both wet and dry removal in real work situations
- Four tests done on dry gaskets ranged from 0.11 – 0.33 f/cc
- Concentration during wet removal was less than 0.06 f/cc

STUDY 3

- Journal of Occupational and Environmental Hygiene, 2006
- Series of tests done for the US Navy
- Highest exposure was during gasket removal and flange cleaning – 0.03 f/cc
- In most cases, levels were indistinguishable from background ambient levels
- Results are not surprising as the asbestos fibers are trapped in the gasket

FIRST HAND DATA

- Can always do air testing to make sure levels are as low as indicated by the literature.
- Samples in breathing zone show what asbestos workers got
- Samples along the edge of the work area show what nearby or adjacent workers would potentially get.

NON- FRIABLE = LOW EXPOSURE

- Gaskets are normally none friable
- IE – they don't crumble and give off airborne fibers
- It would be prudent to test for friability at the start of removing a gasket or cleaning a flange

GOOD PRACTICE

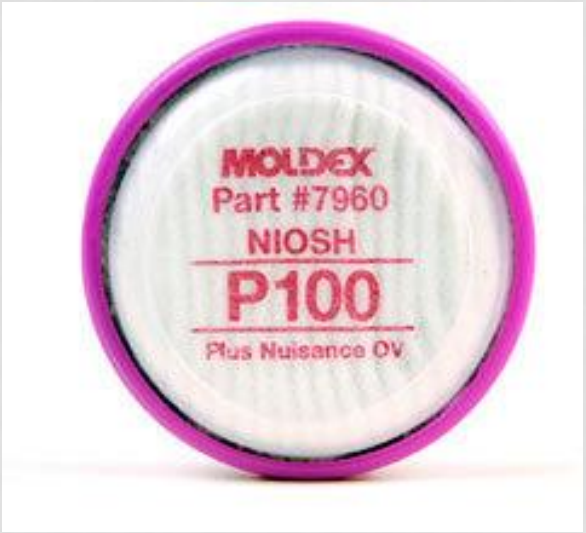
- Respirator
- Coveralls
- Disposable gloves
- Isolation
- Friability Test
- Wetting Agent
- HEPA Vac (for cleanup and accidents)

- Shadow vacuuming for crumbling material

RESPIRATOR

- Elastomeric Respirator with P100 cartridges
- Used as part of a comprehensive respiratory protection program
- Worker should be fit-tested

CARTRIDGE SHOULD SAY P100



- NIOSH Approved respirators
- NIOSH Approved cartridges
- P100 cartridges

DISPOSABLE COVERALLS

- Coveralls should have hood and elastic cuffs

ISOLATION

- Despite low emission, it just makes sense to keep people back
- Post a placard
- Allow 20 feet (approximate) as an additional buffer

NO ASBESTOS LEFT BEHIND

- Take precautions to ensure that no asbestos material drops to the floor or is left behind after the work is done

- Drop cloth or drop table
- Seal openings in motor or equipment
- Apron on unit
- HEPA vac area

NO ASBESTOS LEFT BEHIND

- Collect drip cloths and catch trays and include with asbestos waste
- HEPA vac the area
- Close visual inspection to make sure nothing is on the floor.

TEST FOR FRIABILITY

- A representative piece of asbestos-containing packing material (in good or poor condition) should be removed with a utility knife and sealed in a transparent, reclosable bag. (ziplok bag)
- Apply hand pressure to the packing in the sample bag to determine if any portion is crumbled, pulverized or reduced to powder. If the material simply deforms, but does not crumble or reduces to a powder, then the material is considered non-friable.

WETTING OF GASKET

- Gasket kept moist at all times by wetting thereby preventing the formation of airborne fibres. Spray kits are used for this process. The wetting agent will vary depending on the situation. Wetting agents to be considered: Kerosene, soapy water, PVA glue lubricant, grease, oil
- www.hydro.com.au/.../**Asbestos**-**gasket**-and-packing-**removal**-checklist

WETTING AGENT

- Wetting agent
- Water alone is not sufficient to control dust and fibres.
- You must add a "wetting agent" to reduce the water's surface tension. This increases the water's ability to penetrate material and get into nooks and crannies.
- To make this "amended water," you can use ordinary dishwashing detergent: 1 cup detergent for every 20 liters of water
- http://www.csao.org/UploadFiles/Safety_Manual/Hazards/Asbestos.pdf

WET AND WAIT

- Workers often do not allow time for the wetting agent to soak in thus reducing its effectiveness
- Wet the agent and wait at least a couple of minutes

IF FRIABLE, USE EXTRA PRECAUTION

- Friable gaskets represent an extra risk of airborne fibers.
- Use “shadow vacuuming” for friable material
- One person scrapes while another holds the nozzle close to point of generation.

HEPA VACUUM

- Must have a HEPA filter!
- Good if something falls or crumbles
- Good for final cleanup