



Presented by Asbestos  
Audits International Pty Ltd

[asbestosauditsinternational.com](http://asbestosauditsinternational.com)

# Harmful Substances

- numerous substances that are harmful to the health and wellbeing of workers
- Asbestos
- Silica
- Lead
- Copper

# 1. What is Asbestos?

# Asbestos Is...

- Naturally-occurring mineral
- Mined from the ground
- Odorless
- Tasteless
- Made up of very small fibers



# Asbestos Rock

- Asbestos in the Ground



- Close-up of Asbestos Rock



# Characteristics of Asbestos

- Indestructible
- Resistant to chemicals, heat, cold
- Very stable
- Excellent insulator
- Versatile

# Deadly Asbestos

- Australia
- High rate of asbestos deaths
- Over 550 deaths from mesothelioma in 2007
- More deaths expected in next 40 years
- Worldwide
- Over 107,000 deaths each year
- 125 million exposed at work

# Why is Asbestos Dangerous?

- Some asbestos fibers are so small they can get into the lungs.
- When these tiny asbestos fibers are breathed in they can cause serious health problems, especially in the lungs.
- ***There is no know safe level of asbestos exposure! Any exposure to asbestos could cause disease.***



# Types of Asbestos

- Amosite
- Chrysotile
- Tremolite
- Actinolite
- Anthophyllite
- Crocidolite

# Chrysotile

- Most common
- “White” asbestos



# Amosite

- 2nd most common
- “Brown” asbestos



# Crocidolite

- Most dangerous
- “Blue” asbestos



## 2. Health Effects

# How Asbestos Gets into the Body



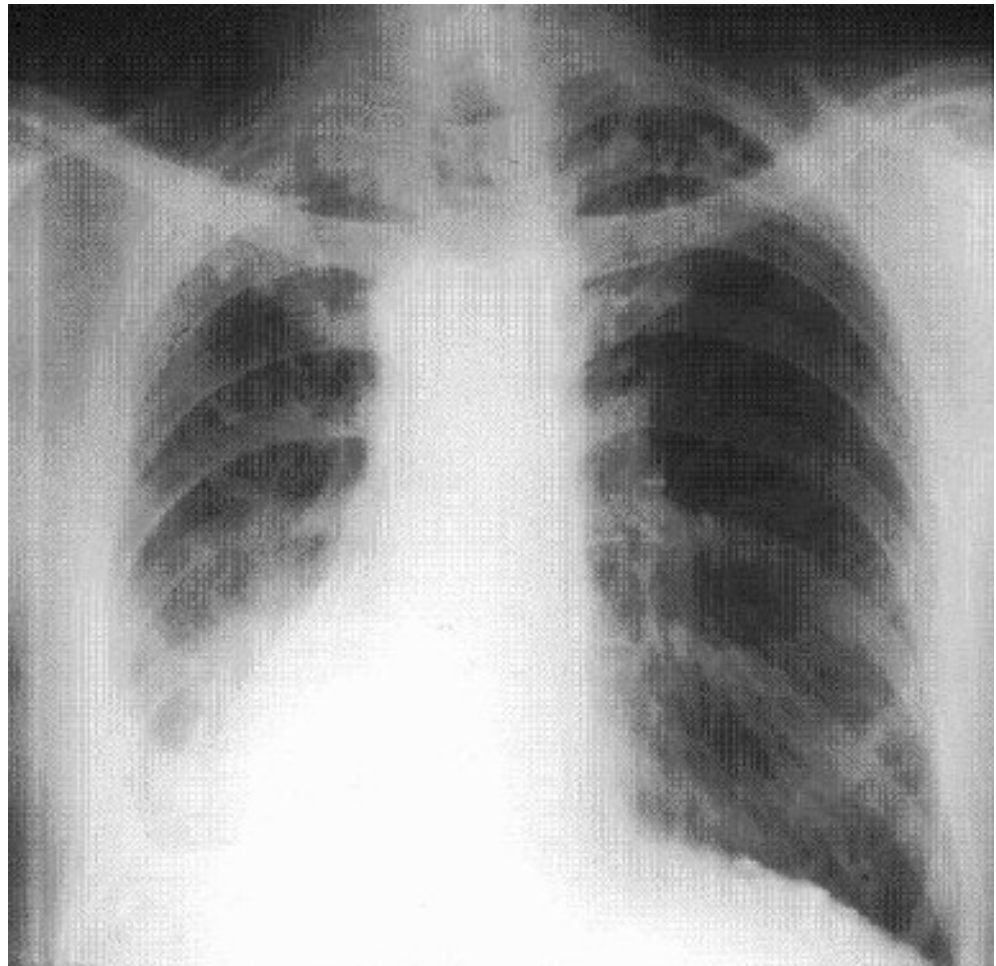
- Inhalation (breathing) is most common way asbestos fibers enter the body.
- Respirable fibers get into the lungs.
- Remain in pleura (lining)

# Asbestos Diseases

- Asbestosis
- Mesothelioma
- Lung cancer

# Asbestosis

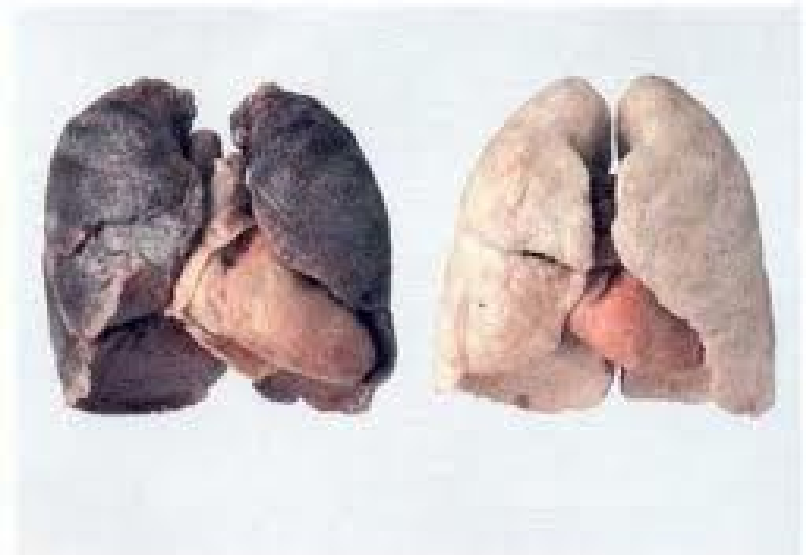
- Serious
- Long-term
- Lung disease





# Lung Cancer

- Largest number of deaths from asbestos exposure.
- Smoking increases risk.



# Mesothelioma

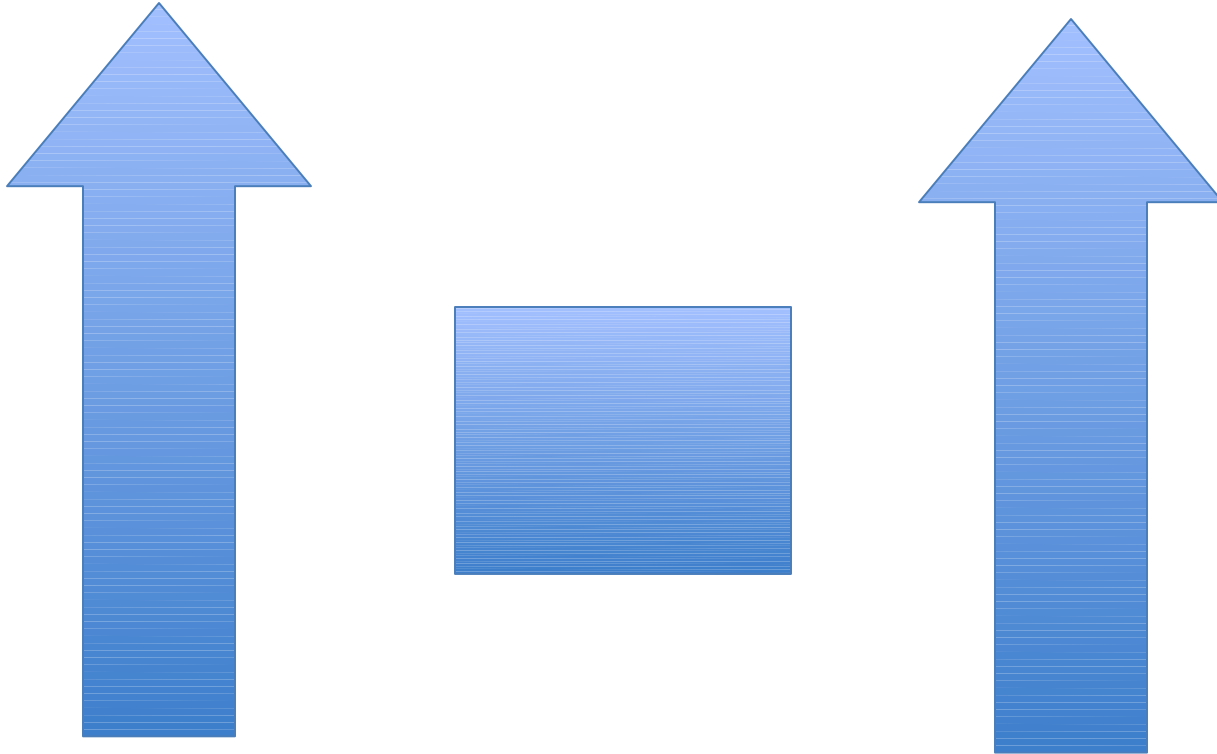
- Rare
- From asbestos exposure only
- Always fatal
- No cure



# Determining Factors

- Length of time of exposure
- Amount of exposure
- Type of asbestos
- Inhalation vs. ingestion
- Smoking
- Age

# Exposure and Risk



# 3. History of Asbestos Use

# Ancient Asbestos

- Wicks
- Candles
- Building
- Fabric
- Armor



# Industrial Revolution



# 20th Century

- Offices
- Schools
- Homes





# Asbestos in Australia

- Mined
- Wittenoom
- Heavily used  
1945-80
- Import and new  
use banned
- Still in many  
buildings



# Brisbane, 1937



# Historic Uses of Asbestos

## Asbestos Umbrellas for Firemen

**T**HE utilization of asbestos umbrellas has helped the "smoke-eaters" of a German provincial city to combat the fire peril. The novel device, illustrated below, is an imitation of the asbestos protective method used during the World war by Allied troops against the terrible effects of liquid fire.

Every brigade member is equipped with one of these umbrellas, which permits closer approach to base of flames.



This large type of asbestos umbrella permits several hose nozzles to be thrust through it, protecting firemen from heat.



**Quilted**

### ASBESTOS MITTS

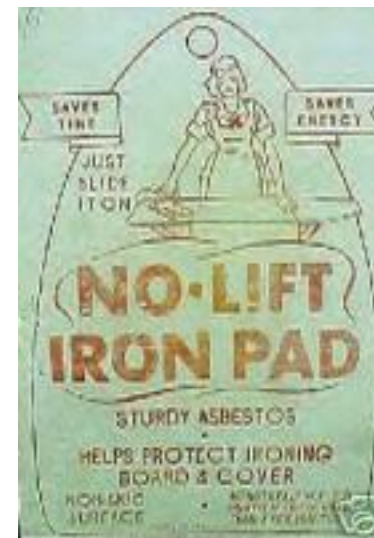
**... they last twice as long**

These asbestos mitts for handling hot metal molds and shapes are reversible to fit either hand. Both sides quilted, won't shred or fray on rough, jagged material. Double wear, double life. Wool lined. All seams double stitched. The answer to troublesome problems. \$2.20 a pair. Discounts for quantities. One of 4300 production-speeding, time-saving safety gloves, aprons, sleeves, spats, etc. Write for *Free* catalog.

**INDUSTRIAL GLOVES CO.**  
6547 Garfield Blvd., Danville, Ill.  
(In Canada: Safety Supply Co., Toronto)



# Asbestos in Household Products





# More Historic Uses

## Asbestos Clad Inventor Defies Flames



Not until the blazing airplane in which he was testing an asbestos suit was almost reduced to ashes did this inventor, shown at right, leave the cockpit. He was unharmed by heat.

**D**EFYING searing flames that would have meant death in a moment under normal circumstances, an English inventor calmly remained seated in the cockpit of a burning plane to test his asbestos suit.

In outward appearance the suit resembles conventional winter flying togs with abnormally large helmet and visor. A special apparatus suspended over the breast cools the air for breathing purposes.

The burning airplane test was conducted as a demonstration for the Royal Aeronautical Society of England. When the flames had reached their peak, the inventor stepped from the plane unharmed, another successful invention to his credit.

## ASBESTOS MATERIALS PATENT ASBESTOS ROOFING.

THE PATENTED ROOFING IS SUITABLE FOR ROOFS OF ALL KINDS AND IS COMPLETELY FIRE-PROOF AND WEATHER-RESISTANT. IT IS SUITABLE FOR ROOFS OF ALL KINDS AND IS COMPLETELY FIRE-PROOF AND WEATHER-RESISTANT.

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# Cigarettes

TURN BACK

*Whether it's the paper...  
or the filter...  
or the tobacco blend*



*Kent's the best...  
from end to end!*



*for the flavor you like*

## KENT FILTERS BEST



KING SIZE • REGULAR SIZE • CRUSH-PROOF BOX

TURN BACK

## MORE SCIENTISTS AND EDUCATORS SMOKE KENT with the Micronite Filter than any other cigarette!

BRAND PREFERENCE OF AMERICAN SCIENTISTS WHO SMOKE		BRAND PREFERENCE OF AMERICAN EDUCATORS WHO SMOKE	
KENT	61.7%	KENT	62.2%
BRAND "X"	30.2%	BRAND "X"	31.7%
BRAND "Y"	7.1%	BRAND "Y"	6.1%
BRAND "Z"	1.0%	BRAND "Z"	9.8%

*"KENT is my favorite, too"*  
says BOB COUSY,  
famous ALL-STAR guard  
of the Boston Celtics

# Health Concerns Emerge

- “Studies show a strong link between respiratory cancers and exposure to asbestos in humans.”

## 4. Where is Asbestos Found?



# Asbestos in Construction

- Insulation
  - Heat
  - Cold
- Siding
- Cement
- Shingles
- Fences

# Pipe Lagging



# Spray-On Insulation



# Loose Insulation

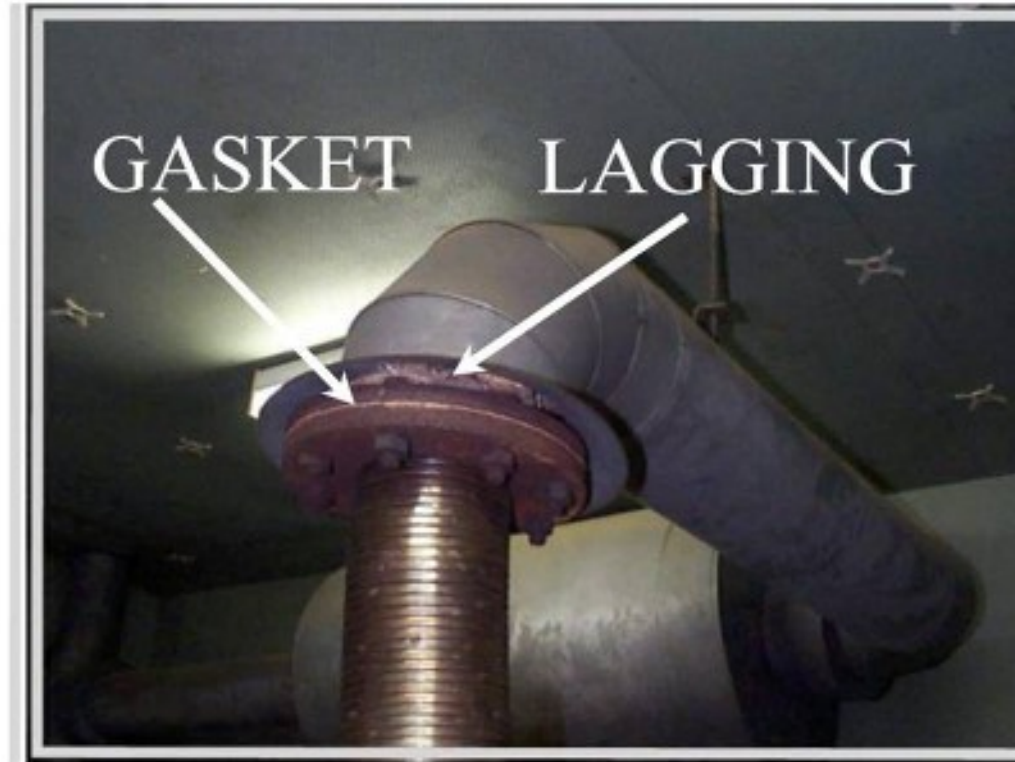


# Zelemite

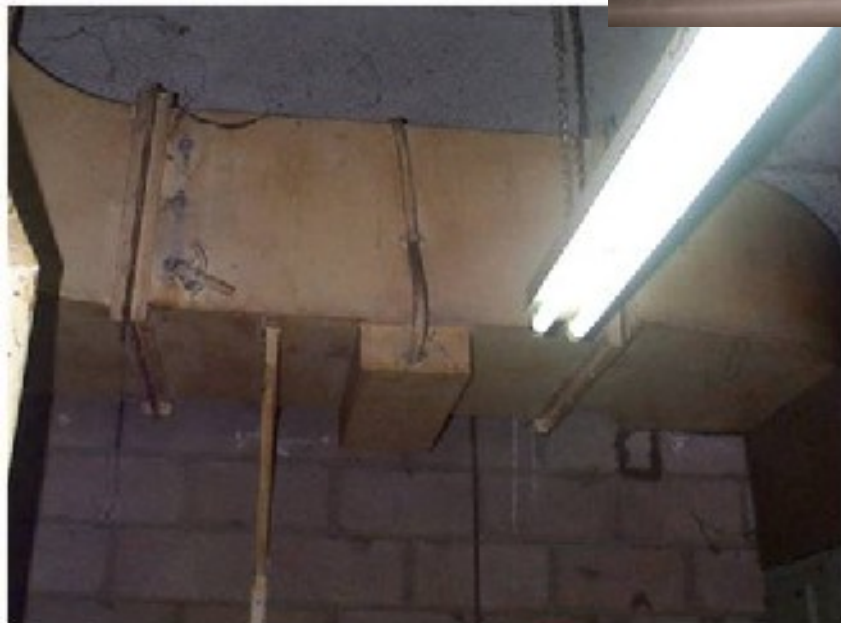




# Asbestos Gaskets



# Millboard

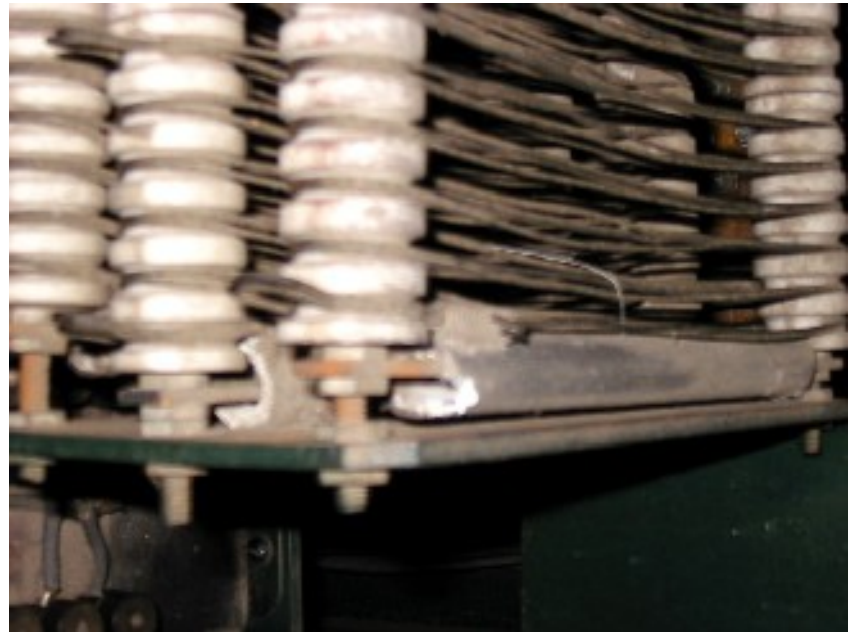
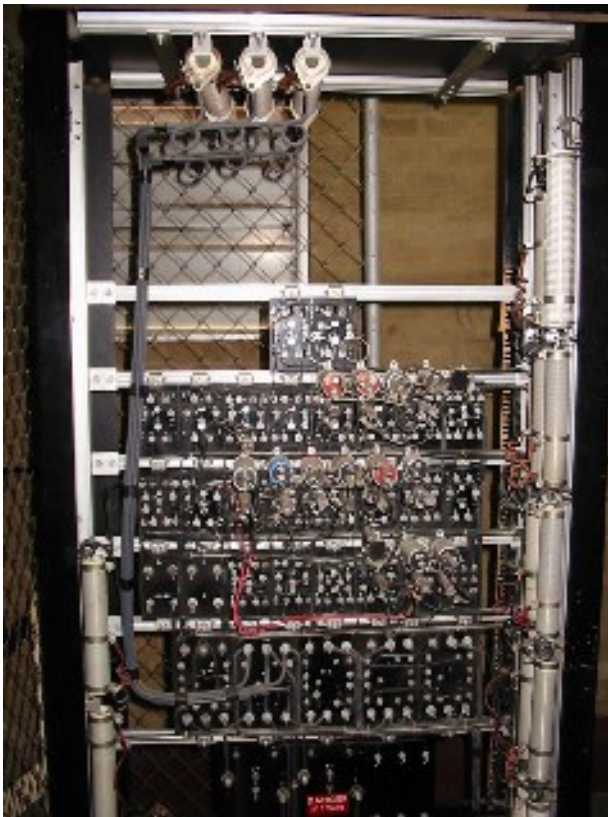


# Electrical Systems





# Lift Controllers



# Asbestos Cement



# Asbestos Cement Sheetting



# Siding





# Fencing



# Surrounds



# Partitions





# AC Roofing





# More AC Roofing



# Roof Shingles



# Fire Doors



# Vinyl Tile Flooring





# Vinyl Sheet Floors



# Bakelite



# Paint



# Textiles





# Bricks/Kilns



# Automotive Uses



# When is Asbestos Dangerous?

- In poor condition
- Likely to be further damaged or to deteriorate
- Likely to be disturbed due to work in the area
- In area where workers may be exposed

# Who is at Risk?



Workers in Building Trades



# Not Just Building Trades



# At Risk: Not Just Workers





# Asbestos Ban

- 1989: bans started
- From 31 December 2003: all asbestos banned in workplaces in Australia
- Few exemptions
- Goal: asbestos-free workplaces

# 6. Asbestos Legislation

# Model Work Health and Safety (WHS) Legislation

- Model WHS Act
- Model WHS Regulations
- Model Codes of Practice
- National Compliance and Enforcement Policy
- Safe Work Australia
- Commonwealth, states, and territories
- 1 January 2012

# Model Work Health and Safety Act

## (3) Object

(1) The main object of this Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces.



# Model WHS Act (cont)

(5) *Person conducting a business or undertaking*  
(PCBU)

(1)(a) Alone or with others

(1)(b) For profit or not



# Model WHS Act (cont)

(20)

*Persons  
with  
managem*

- E.g. owner, property manager, Body Corporate, real estate agent, or manager of a building that is used, or is likely to be used, as a workplace.







# Model WHS Act (cont)



## *(7) Worker*

- Carries out work for PCBU, including work as employee; contractor or subcontractor; employee of contractor or subcontractor; employee of labour hire company; outworker; apprentice or trainee; student gaining work experience; volunteer; person of a prescribed class.



# Model WHS Act (cont)

## (7) (cont) Police officer

- Worker
- At work when on duty, but not otherwise

## (7) (cont) PCBU

- Worker if carries out business in that business or undertaking

# Model WHS Act (cont)

## *(8) Workplace*

- (1) Place where work is carried out, including any place worker goes, or is likely to be, while at work
- (2) Workplace includes vehicle, vessel, aircraft, other mobile structure, any waters, and any installation on land,

# Model WHS Act (cont)

## (19) Primary Duty of Care

(1) PCBU must ensure the health and safety of

(a) workers engaged by the person; and

(b) workers directed by the person

(2) PCBU must ensure the health and safety of others is not put at risk

# Model WHS Act (cont)

## (19) Primary Duty of Care (cont)

### (3) PCBU must ensure

- (a) work environment without health or safety risks
- (b) safe plant and safe structures
- (c) safe systems of work
- (d) safe use, handling, and storage of plant, structures, and substances
- (e) adequate facilities for workers

# Model Work Health and Safety Regulations

- Chapter 5, Regulation 1, Definitions

Asbestos containing material (ACM) means any material or thing that, as part of its design, contains asbestos.



# Model WHS Regulations (cont)

## (39) Information, Training, and Instruction

- Suitable to nature of work, nature or risks, and the control measures implemented.
- Readily understandable

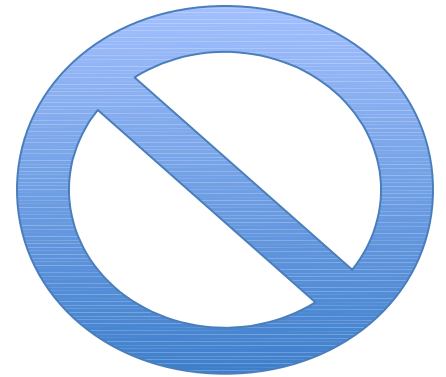


# Model WHS Regulations (cont)

## Part 8: (419) Prohibitions on Asbestos

From 31 December 2003: all asbestos banned in workplaces

- Few exceptions
- Replace with non-asbestos products
- Goal: asbestos-free workplaces



# Model WHS Regulations (cont)

## (420) General Duty

- Identify asbestos
- Assess risk of exposure
- Implement and review control measures
- Consult with workers
- Coordinate with other duty holders

# Model WHS Regulations (cont)

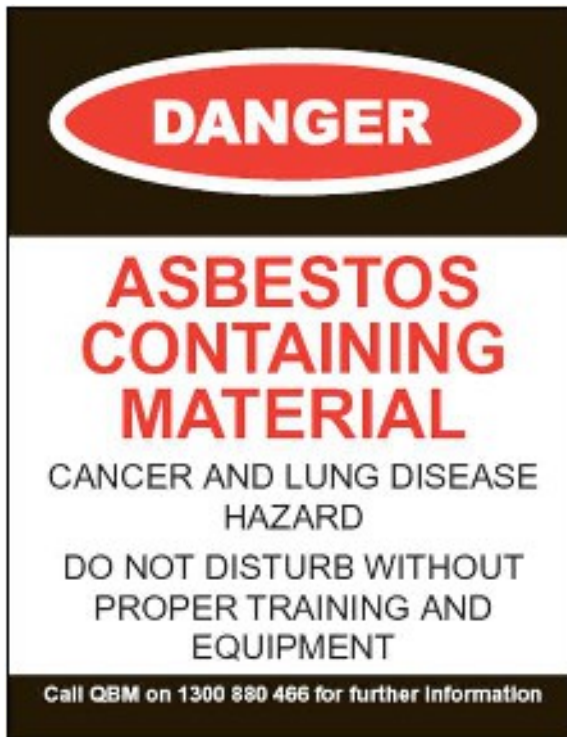
(422) Identify or assume asbestos

(423) Sampling and analysis



# Model WHS Regulations (cont)

- (424) Presence and location of asbestos (signs and labels)



# Model WHS Regulations (cont)

## (422) Competent Person

- Knows where to look for ACM
- Identifies suspected ACM
- Takes asbestos samples
- Evaluates condition
- Determines risk





# Model WHS Regulations (cont)

## (429-430) Asbestos Management Plan

- Identification of asbestos, including locations, signs, labels
- Decisions about safe work practices and control measures
- Procedures for detailing accidents/emergencies
- Workers carrying out work involving asbestos
- Responsibilities

# Model WHS Regulations (cont)

## (425) Asbestos Register

- Date identified
- Location
- Type
- Condition

(426) Review (in accordance with the auditing recommendations and at least every 5 years) and Revise Register

(427) Access to Register

# Asbestos Register Notice

## NOTICE!

An Asbestos Register has been completed for this site.

Prior to undertaking any works, the Register must be consulted.

To inspect the Register, contact the building owner or manager at \_\_\_\_\_.

# Two New Codes of Practice

- *How to Manage and Control Asbestos in the Workplace*
- *How to Safely Remove Asbestos*

# Major Changes in New Asbestos Law

- Changes to asbestos regulations from January 1, 2012
- Inspection of workplaces built before 2004 (was 1990)
- Fines increased to \$6,000 - \$60,000
- Documentation needed even if no ACM found
- More training for asbestos professionals

# Duties of PCBU

- Under the WHS Act (19), the PCBU has the primary care of duty to ensure the health and safety of workers.
- Under Part 8 of the WHS Regulations, the PCBU is responsible for training employees (39) and controlling the risk of asbestos exposure (420).



# Duties of Person with Management or Control of a Workplace

- Identify ACM (Audit) (420)
- Indicate location of ACM (424)
- Develop and maintain asbestos register (425)
- Develop and maintain asbestos management plan (429)



# VICTORIAN LEGISLATION

- Victoria not signed up to the Model Legislation yet
- Currently controlled by **Occupational Health and Safety Regulations 2007**
- Very similar to Federal legislation

# ASBESTOS REMOVAL

- Requirements
  - Negative pressure exhaust units
    - comply with *AS 4260:1997 High efficiency particulate air (HEPA) filters – Classification, construction and performance*
  - ***Asbestos vacuum cleaners***
    - comply with the Class H requirements in Australian Standard *AS/NZS 60335.2.69 Industrial vacuum cleaners or its equivalent.*

Australian Standard *AS/NZS 60335.2.69 Industrial vacuum cleaners or its equivalent.*



# Clause AA7.12

on class **H** appliances, the appliance filtration efficiency should be tested at least annually, or more frequently as may be specified by national requirements.

# Why Test

- Like all mechanical appliances, wear and tear and damage to “H” class vacuums and NPU’s necessitates periodic servicing to ensure continuance of optimal performance levels.
- An “H” Class rating necessitates a more stringent servicing and testing regime to ensure the appliance continues to achieve the performance and safety levels it was manufactured to deliver.



- The critical item in achieving 99.995% filtered output in both Vacuums and NPU's is the "H" Class HEPA Filter used in H Class Vacuums and NPU's.
- To meet the required level of specification, these HEPA filters are manufactured to meet very high standards of filtration on an international basis.

- These HEPA filters however must also work in conjunction with gaskets and other parts of the appliance to provide 99.995% efficiency. Once installed in an appliance, the appliance as a whole must be tested to ensure it achieves a maximum penetration of 0.005% (99.995% efficient).

- HEPA filters however have a finite life and are often subject to damage and wear & tear that can see them fall well short of their intended efficiency levels. HEPA filter requires correct mounting against gaskets etc to ensure that the appliance as a whole continues to achieve 99.995% efficiency. The effectiveness of an appliance cannot be tested by mere visual inspection.

- A Dispersed Oil Particulate (DOP) test is a cost effective, definitive, factual test used around the world in many mature asbestos removal industries to test an appliances' efficiency.

# Manufacturer's Instructions

## Nilfisk - H Class Vacuum User Manual Extract

- *A dust test must be performed at least once every year by the manufacturer or a trained person. This test covers, for example, whether there is damage to the filter, the vacuum cleaner is sealed to the air and the control equipment works properly.*

## Numatic – H Class Vacuum User Manual Extract

- *The manufacturer, or an instructed person, shall perform a technical inspection at least annually, consisting of, for example, inspection of filters for damage, air tightness of the appliance and proper function of the control mechanism. The appliance filtration efficiency should be tested at least annually. This work should only be carried out by fully trained personnel.*

## Kerrick – H Class Vacuum User Manual Extract

- *The user or a trained person must carry out a technical check – at least once a year – which consists, for example, in checking the filters, searching for damages to the air tightness of the device and the correct functioning of the control mechanism.*
- *The efficiency of the filtering of the device must be checked at least once a year.*



# Sample Testing Results

- Preliminary DOP tests by Assured Equipment Services of locally used H Class Vacuums (that have never been tested since purchase) revealed a staggering 40% DOP test failure rate.
- 4 out of 10 units were no longer filtering at a 99.995% efficiency level, and as such their outputs could contain hazardous particles.

- In Australia there are asbestos extraction appliances that have been used for 10 consecutive years or more, yet these appliances have no service history whatsoever.

- Despite a small number of vacuums and NPU's having been serviced and repaired by owners or A class asbestos removalists, without a DOP test no confidence can be established that these machines continue to provide a 99.995% filtration level.

# Take Away

- Ensure the current Work Health and Safety Regulations are followed
- Undertake an Asbestos Audit
- Develop an Asbestos Register
- Develop an Asbestos Management Plan
- Ensure all filtration equipment is tested at least yearly
- Check Test Certificates for equipment testing before employees or contractors start work