

Energy Audits and Energy Efficiency Design

Building hazardous materials –
identification and handling

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Content

- › General aspects on hazardous materials
- › Asbestos specific aspects
- › Product identification and handling
- › Examples

Hazardous materials

Typical hazardous building materials identified in public buildings in Kosovo:

- Compact fluorescent lamps containing mercury
- Asbestos containing material (e.g. Salonite)

Other hazardous building materials (Example):

- PAK – Polycyclic Aromatic Hydrocarbons, e.g. Tar/bitumen containing products for water proof seals in roof structures, basements, etc.
- Mineral wool installed before 1990..... Under discussion!!!! Not considered hazardous at the moment

The contractor and the supervisor are responsible for waste handling (contractor) and related documentation (contractor and supervisor)

Related key guidelines:

- World Bank: Environmental Management Framework
- Kosovo legislation

How to handle hazardous material

- Compact fluorescent lamps containing mercury
 - Non destructive removal
 - Packed Collection in an interim storage
 - Handing over to the waste collection center for further recycling (to be defined by the employer)
- Asbestos containing materials (e.g. Salonite)
 - Procedure and level of required Health and Safety (H&S) measures depending on the type of asbestos
 - Highest level of H&S measures
Weakly bound asbestos – sprayed asbestos, asbestos containing cartons, textiles (density – lower than 1,5 kg/dm³, asbestos content higher than 25%)
 - Lower level of H&S measures
Strongly bound asbestos – asbestos cement products, seals (high density and asbestos content lower than 25%)

Environmental Management Framework

- The environmental management framework is discussed in the tender documents
- Procedures/processes and responsibilities have to be agreed before starting implementation
- Typical responsibilities:

Construction company: EE civil works and installation activities will be done by authorized companies. They are responsible for full and qualitative implementation of the Environmental Management Plan (EMP) and related Checklists

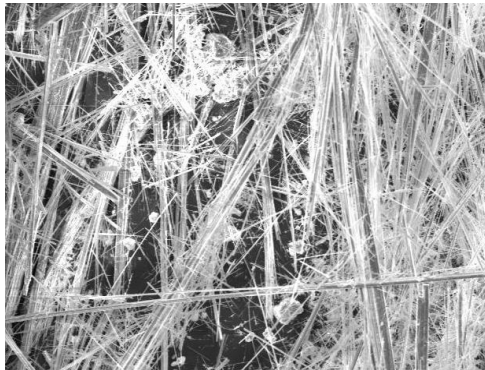
PIU/Supervisor: supervising independently or jointly the mitigation and environmental protection measures stipulated in Environmental Management Plan.

Asbestos deposits

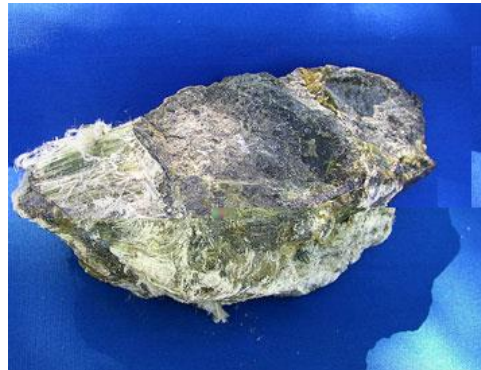
➔ Asbestos: natural occurring, fibrous, silicate-material

- „Magic-material“, was used universally.
 - **It is not flammable**, resistant to heat, chemically very stable, excellent electrical and thermal insulation properties, high elasticity and tensile strength, good binder material properties, insoluble by water, chemically not reactive, not molding and is proven to be carcinogenic to humans.
- Types:
 - Chrysotile asbestos (Chrysotile/White asbestos)
 - Anthophyllite asbestos (Krokydolithe/Blue asbestos; Amosite/Brown asbestos, Anthophyllite, Tremolite, Aktinolithe)

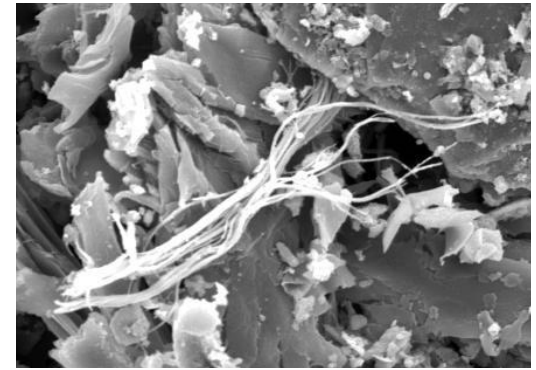
Naturally occurring asbestos (NOA)



Chrysotile fibres (200x enhanced)



Chrysotile, naturally



Amphibole asbestos fibres (x1000)

- Asbestos fabrication: Economically most important: Chrysotile (~ 95 % of worldwide production)
- 80 % of global asbestos production came from Soviet Union, Canada, South Africa.
- Main deposits in Europe: Corsica & the Balkans
- Kosovo product: Salonite

Technical functions of asbestos materials

- Fire protection
- Heat insulation/ heat protection
- Acoustic/Noise protection
- Heat accumulator
- Moisture protection

How to handle asbestos containing material

Weakly bound asbestos

- Containment of interior areas where removal will occur in a negative pressure enclosure (only for weakly bound ACM)
- Protection of walls, floors and other surfaces with plastic sheeting
- Construction of decontamination facilities for workers and equipment;
- Removal of the ACM using wet methods and promptly placing the material in impermeable containers;
- Final clean-up with vacuum equipment and dismantling of the enclosure and decontamination facilities;
- Disposal of the removed ACM and contaminated materials in an approved landfill

How to handle asbestos containing material

Strongly bound asbestos – specifically asbestos cement products (Salonite)

- Prohibit any mechanical stress on fiber-cement panels (no drilling, cutting, smashing, cutting, dropping etc.)
- Strive demounting procedure using lifting devices
- Wear appropriate respiratory protection FFP3 and disposable coveralls
- Moisten panels before uninstall;
- Collect panels without destruction
- Pack them plastic foil / e.g. panel big-bags with Asbestos Label
- Orderly Store in an interim storage until transport and disposal at appropriate disposal site.

Application / ACM products (I)

- Asbestos cement (65 %)



**Corrugated
roofs**



Roof sheets



Pipes/Drains

- Panels /
Cardboards



Thermal insulation



Insulation strip

Application / ACM products (II)

- Sprayed asbestos



Sprayed cement



Intumescent coating

- Textile



Insulation mattresses



cord

Application / ACM products (III)

- Composite materials (foam)



Gasket rings



„Cushion Vinyle“
floor tiles (Glue)

- Others

Profile



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Andreas HELBL

- 25 years of experience as expert in the energy & environmental sector and sustainable development
- Strong experience in energy efficiency in buildings and industries
- Strong team leading capacities and management skills for multinational and interdisciplinary projects
- More than 20 years of international project experience (CEE, SEE, Latin America, etc.)
- Lecturer on environmental due diligence and building certification
- 15 years of leadership in project and business development

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to the future.**

Wherever!

Whenever!

With you.



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20/10/2011

Bar spacer/Abstandshalter (1)



20/10/2011

Bar spacer/Abstandshalter (2)



20/10/2011

Bar spacer/Abstandshalter (3)



Bar spacer/Abstandshalter (4)



Bar spacer/Abstandshalter (5)



20/10/2011

Bar spacer/Abstandshalter (6)



Asbestine Cardboard/Asbestpappe



Asbestos cement/Asbestzement (1)



Asbestos cement/Asbestzement (2)



Corrugated asbestos cement sheets/Asbestzement-Wellplatte
(1)



Corrugated asbestos cement
sheets/Asbestzement-Wellplatte (2)



Corrugated asbestos cement sheets/Asbestzement-
Wellplatte (3)



Asbestos cement
duct/Asbestzementkanal (1)



Asbestos cement
duct/Asbestzementkanal (2)



Asbestos cement panels/Asbestzementplatten
(1)



Asbestos cement panels/Asbestzementplatten
(2)



Fire protection/BS-Holztür (1)



Fire protection/BS-Holztür (2)



Fire protection/BS-Holztür (3)



Fire protection dampers/BS-
Klappenblatt (1)



Fire protection damper/BS-Klappenblatt



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metaldecke (1)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (2)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (3)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (4)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (5)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (6)



Sprayed asbestos cement(fire protection) metal ceiling/BS-
Spritzasbest Metalldecke (7)



Sprayed asbestos cement (fire protection) metal ceiling/BS-Spritzasbest Metalldecke (8)



Fire protection door/BS-Tür (1)



Fire protection door/BS-Tür (2)



DEP. FÜR ÖKOGENETIK
LABORS

DEP. FÜR ÖKOGENETIK
PROF. DR. CHRISTA SCH
▶ SEKRETARIAT

Fire protection door/BS-Tür (3)



Fire protection door/BS-Tür (4)

Ziploc® BRAND

52x 197

Altkamer 14

M-36 Brandschutztür 1.67
vor 15.12

12 15 / 7 / 2014

Toppits®

Albal

Fire protection door/BS-Tür (5)



Fire protection door/BS-Tür (6)



Fire protection door/BS-Tür (7)



Insulation mat/Dämmmatte (1)



Insulation mat/Dämmmatte (2)



Insulation mat/Dämmmatte (3)



Insulation/Dämmung (1)



Insulation/Dämmung (2)

cklauf
cke 2





Duct/Deckendurchbruch (1)



Duct/Deckendurchbruch (2)



Duct/Deckendurchbruch (3)



Duct/Deckendurchbruch (4)



Flat sheets as facing/Fassade (1)



Flat sheets as facing/Fassade (1)



Flat sheets as facing/Fassade (1)



Flat sheets as facing/Fassade (1)



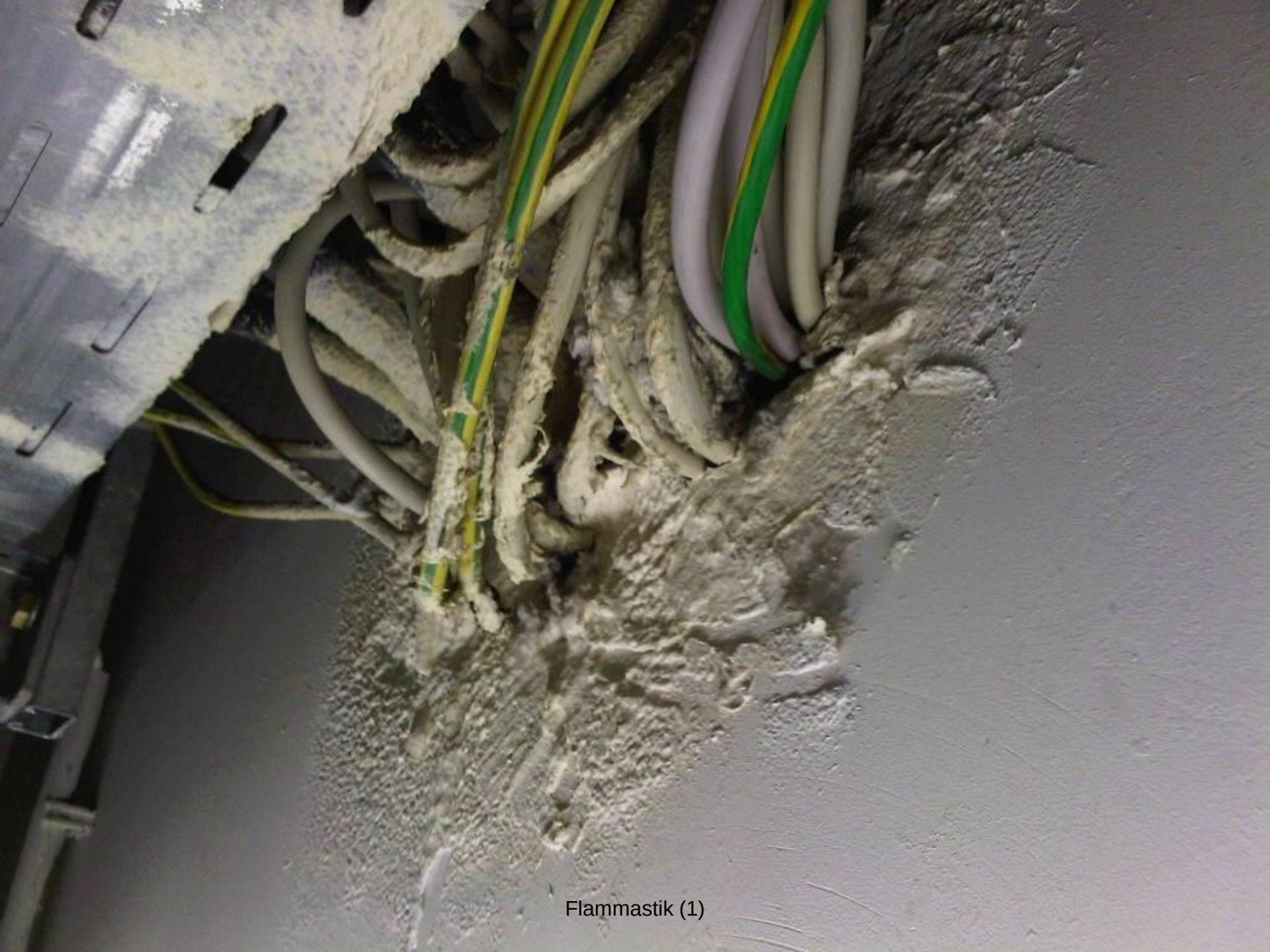
Flat sheets as facing/Fassade (1)



Window gaskets/Fensterdichtungen



Flammastik (1)



Flammastik (1)



Flammastik (1)



Flammastik (1)



Flammastik (1)



Flammastik (1)



Gasket rings/Flanschdichtung (1)



Gasket/Flanschdichtung (2)



Gasket/Flanschdichtung (3)



20/10/2011

Gasket/Flanschdichtung (4)



Gasket/Flanschdichtung (5)



Hard coating as thermal insulation on boiler
wall/Kesselwand (1)



Hard coating as thermal insulation on boiler
wall/Kesselwand (2)



Hard coating as thermal insulation on boiler wall/Kesselwand
(3)





10 Klingerit/Gasket rings (2)



⑩ Klingerit/Gasket rings (3)



© Klingerit/Gasket rings (4)



10.10.2013 10:22

⑩ Artificial mineral fibres (fire protection walls)/Künstliche Mineralfasern (1)



10.10.2013 10:23

Artificial mineral fibres(fire protection walls)/Künstliche
Mineralfasern (2)



10.10.2013 10:50

Artificial mineral fibres(fire protection walls)/Künstliche
Mineralfasern (3)



EBENE 1
SPANGE 2
← NORDWEG

DEPT. FÜR MOLEKULARE
EVOLUTION UND ENTWICKLUNG
PROF. DR. U. TECHNAU

LABOR

21.10.2013 14:10

Artificial mineral fibres (fire protection walls) / Künstliche
Mineralfasern (4)



Compensator/fire flaps (1)



Compensator/fire flaps (1)



Lightweight design
(Sandwich)/Leichtbau (1)



Lightweight design
(Sandwich)/Leichtbau (2)



Lightweight design
(Sandwich)/Leichtbau (3)



Flat sheets (soffit)/Leichtbauplatte (1)



Flat sheets (soffit)/Leichtbauplatte (2)



Flat sheets (soffit)/Leichtbauplatte (3)



Flat sheets (soffit)/Leichtbauplatte (4)



Flat sheets (soffit)/Leichtbauplatte (5)



Flat sheets (soffit)/Leichtbauplatte (6)



Flat sheets (soffit)/Leichtbauplatte (7)



Flat sheets (soffit)/Leichtbauplatte (8)



Flat sheets (soffit)/Leichtbauplatte (9)



Flat sheets (soffit)/Leichtbauplatte (10)



Ventilation channel (sprayed asbestos
cement)/Lüftungskanal



Asbestos cement/Hard coating on eg.
Pipes(1)



Asbestos cement/Hard coating on eg.
Pipes(2)



Asbestos cement/Hard coating on eg.
Pipes(3)



Asbestos cement/Hard coating on eg.
Pipes(4)



Flat sheets for Window sills/Fensterbrett
(1)



Flat sheets for Parapet (2)



Flat sheets for Soffit(3)



Sprayed asbestos cement - Lagging of pipes
(thermal insulation)



Sprayed asbestos cement - Lagging of pipes
(thermal insulation)



Sprayed asbestos cement - Lagging of pipes
(thermal insulation)



Asbestos cord/Asbestschnur (1)



Asbestos cord/Asbestschnur (2)



Asbestos cord/Asbestschnur (3)



Asbestos cord/Asbestschnur (4)



Asbestos cord/Asbestschnur (6)



Asbestos cord/Asbestschnur (7)



Sprayed asbestos cement – ventilation channel
insulation (1)



Sprayed asbestos cement – ventilation channel
insulation (2)



Sprayed asbestos cement – ventilation channel
insulation (3)



Sprayed asbestos cement – ventilation channel
insulation (4)



Sprayed asbestos cement – ventilation
channel insulation (5)



Sprayed asbestos cement – ventilation
channel insulation (6)



Asbestos fleece