

Release of asbestos fibers from weathered building materials

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Motivation of the study

- ✓ Asbestos-containing building materials for outer shell applications are omnipresent, mainly in the form of corrugated sheets and slates.
- ✓ The most recent applications in Flanders date back to 1998, but the roofs are older than 40 years now.
- ✓ Weathering of the cement matrix of these building materials results in the release of asbestos fibers.

Release of asbestos fibers

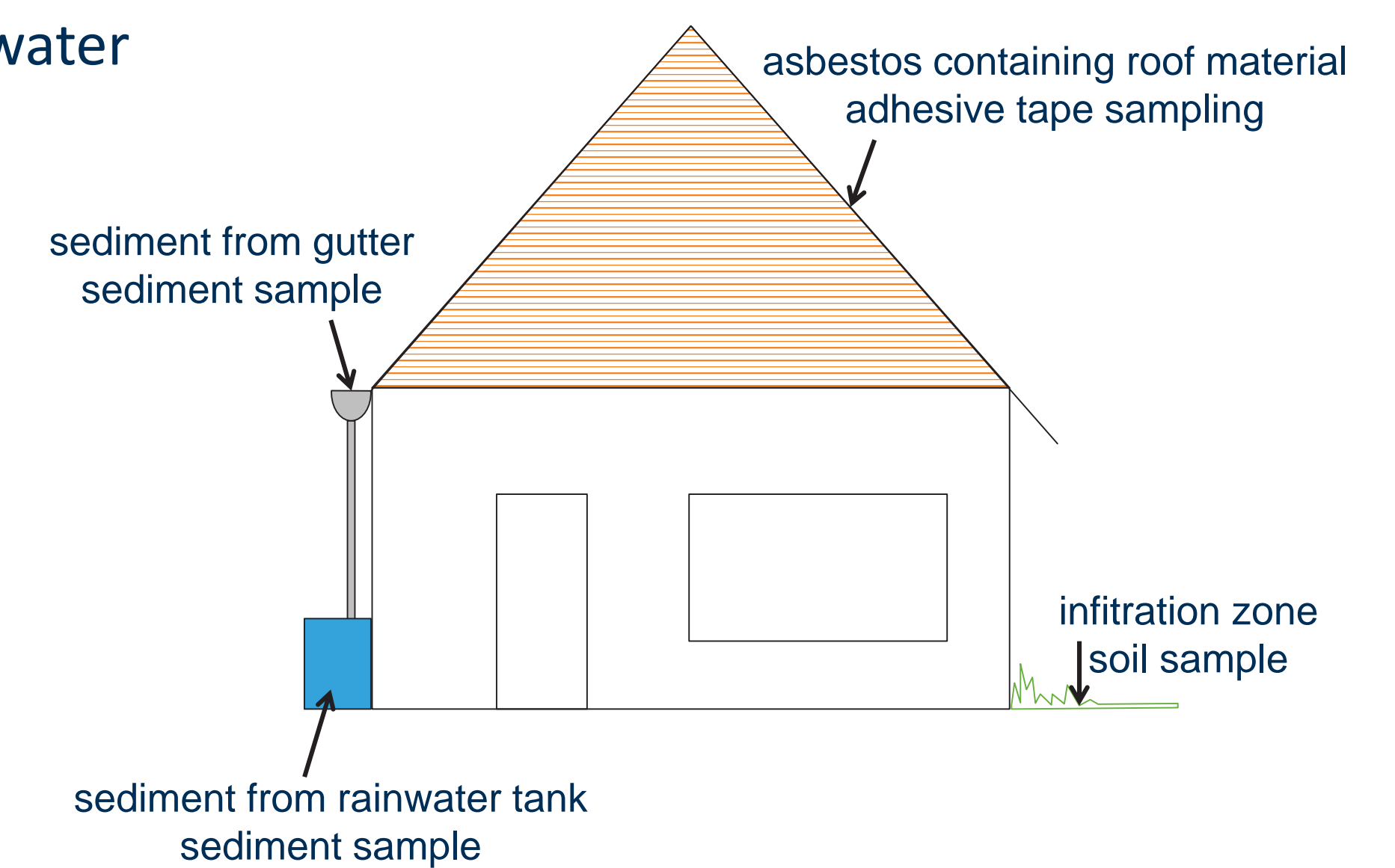
- ✓ Most important asbestos release pathway: run-off with rainwater
- ✓ Less important asbestos release pathway: wind erosion

Materials and Methods

- ✓ 25 different locations
- ✓ Assessment of the weathering status based on visual inspection of site and building material, questionnaire
- ✓ Sampling of asbestos release from materials by adhesive tape sampling and air sampling
- ✓ Sampling of asbestos in sediment from gutter and water tank and soil from infiltration zone

Objective of the study

- ✓ Measure the release of asbestos fibers to the environment from asbestos containing roof materials
- ✓ Investigate the correlation between asbestos release and weathering status
- ✓ Evaluation of related risks to humans and the environment



Results

- ✓ Release of large quantities of non friable asbestos from outer shell building materials
- ✓ Clear relationship between release of asbestos fibers and weathering conditions and age of building material
- ✓ Condition of the slate coating determines the released quantities from slate covered roofs and walls, no release from slates with intact coating
- ✓ Large quantities of non friable asbestos found in gutter sediments
- ✓ Large quantities of non friable asbestos found in rainwater tank sediments

Policy

- ✓ Incentive for the implementation of an increased collection rate of asbestos containing building materials by the Flemish Government
- ✓ Ambition: living area free from asbestos building materials and asbestos waste by 2040
- ✓ Roadmap for safe removal of asbestos materials

Risks

- ✓ Accumulation of non-friable asbestos in sediments and soil of infiltration zone above contamination threshold value
- ✓ Potential secondary dispersion from these sediments and soils
- ✓ Potential risk of human exposure from outer shell material during calamities (fire), demolishing works, renovation works
- ✓ Actual risk of human exposure depends on local conditions and activity patterns:
 - ✓ Low actual risk at vegetated infiltration zones without entering
 - ✓ Increased actual risk at infiltration zones with scratching and churning of the soil

	Weathering	Risk of dispersal of non-friable asbestos	Actual human risk	Replacement of asbestos containing roof/wall materials
Corrugated roof with gutter	high	high	none / low	expedient
Corrugated roof with infiltration zone	high	high	none / low	expedient
Slate roof with intact coating	low	low	none	less urgent
Slate roof with weathered coating	high	high	none / low	expedient
Slate wall with weathered coating	high	high	none / low	expedient