

Measurements around fumigated containers



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Interest of the Investigation

Export containers: frequently fumigation necessary (ISPM 15) or protection of cargo against pests)

Import containers: Often found with (high) residues of fumigants

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Objectives of the investigation

Knowledge of the concentrations actual appears around fumigated containers (import and export containers)

Using the results to determine a safe distance with sufficient protection for public health

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Questions:

1. Which concentrations of several fumigants can be found, especially leeward from containers defumigated?
2. Are there differences observable in type of fumigant?
3. From which distances the concentrations meet requirements?
4. Are the results usefull to set up one safe distance for different types of fumigants around fumigated containers?

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Measuring and sampling methods

Component	Samplingmethod	Analysingmethod
Methylbromide	Badges	GC-MS
Methylbromide, chloorpicrine, dichloorethaan, vikaan, fosfine	Tedlarbags, canisters	GC-MS
Methylbromide, 1,2-dichloorethaan	Koolbuizen	GC-MS
methylbromide	Photovac	Photovac
methylbromide	Sensoren	Sensoren

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Approach:

Exportcontainers

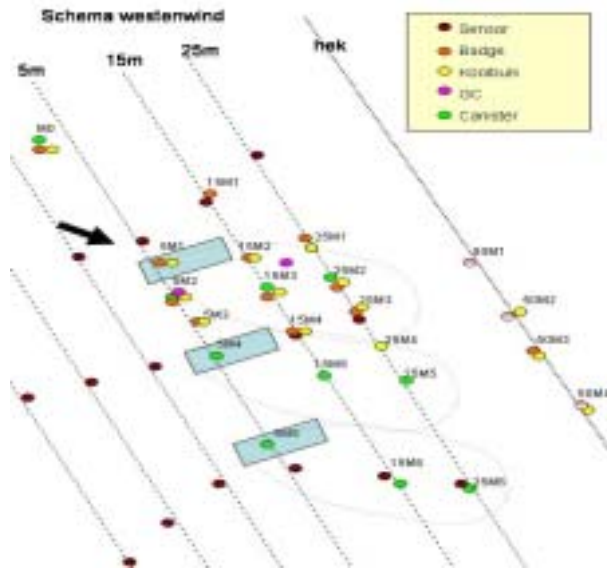
- investigation active fumigated containers comparable of exportcontainers are fumigated in the Netherlands.
- three containers fumigated with methylbromide, three with fosfine and three with sulfurylfluoride.
- During defumigation concentrations of the fumigants are measured at several distances leeward of the containers.

Importcontainers

- During six weeks sampling with several methods for methylbromide, fosfine, 1,2 dichloorethaan, surfurylfluoride and chloorpicrine.
- Investigation still going on at the moment

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formation sampling equipment



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Results active fumigated containers:

Sampling during two hours following concentrations found:

Methylbromide: 5-10 meters: ca. 10 mg. 25-35 meters: 1 mg.

Surfurylfluoride: 5 meters: 10 mg. 15 meters: 4 mg. 25 meters: 2 mg.

Fosfine: nothing was found possible reason: failure of fumigation, new investigation takes place on this moment.

Before opening concentrations of methylbromide and surfurylfluoride were found behind the containers.

Container	fumigant	Concentration inside the container (g m^{-3})	Concentration behind the containers (mg m^{-3})
	methylbromide	3	
	methylbromide	59	0,3
	methylbromide	33	
	Vikaan	36	
	Vikaan	10	0,4
	Vikaan	15	
	Fosfine	0,003	
	Fosfine	0,01	0
	Fosfine	0,10	

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Results importcontainers:

Investigation is still going on.

Importcontainers possible fumigated are placed in a special area, measured with field equipment (tubes, electrochemical sensors) and if fumigants are present samples are taken and analysed by GCMS.

Results till now: concentrations of methylbromide, chloropicrine and fosfine are found up to 20 meters from the containers after opening due to defumigation.