



Universiteit Utrecht

Diergeneeskunde

Measuring SARS-CoV-2 in the air: experience from studies in mink farms and a slaughterhouse

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SARS-Cov-2 in mink farms

- First detected in The Netherlands (Apr 2020), Denmark, Spain, USA
- Introduction from humans most likely
- Mink-to-mink, mink-to-cat, and mink-to-human transmission
- 68% of tested workers SARS-CoV-2 positive
- Until now, 41 out of 128 mink farms in NL infected (culled)
- Accelerated ban on mink farming (2024 → 2021)



Is SARS-Cov-2 in minks an environmental health risk?

- Precaution: road closure 400 meter
- Viral contamination in mink houses and surroundings?

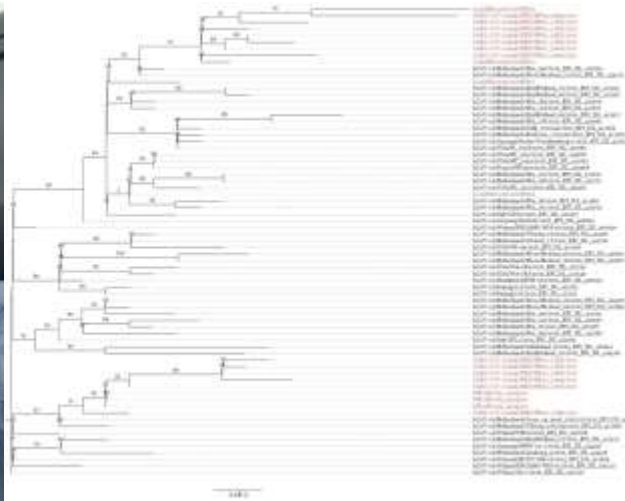


Active air sampling

- Inhalable dust
- PM_{10}
- Teflon filters
- 6 hour samples
- 3-4 day samples
- Filters extracted and analyzed (WBVR, Lelystad)

Stationary and personal air samples in mink houses: SARS-Cov-2 RNA detected in inhalable dust, ND/low levels in PM₁₀

Air sample virus sequences cluster with mink sample sequences from same farm



Additional sampling

Sample type	N detect
Swipes of cage	99/99 (100%)
Bedding material	81/94 (86%)
Passive air sampling (EDC)	81/99 (82%)
Faeces	55/95 (58%)
Swab of drinking water supply	34/100 (24%)
Feed leftovers	11/91 (12%)

Determinants of viral load:

Farm, recently deceased versus live animal, week in study (decline)

Two weeks after culling: many samples still detectable



Beyond farm premises, SARS-Cov-2 RNA not detectable in inhalable dust or in PM₁₀

Upwind and downwind gradient, ~10 – 100 m



Long-term sampling on property, in village, background location



Precautionary area measures were lifted (15 May)



Foto: Mark Baiten

CORONAVIRUS

400-meter zone rondom nertsenboerderij opgeheven

vr 15 mei 2020, 16:33

[Geen reacties](#)



Conclusions SARS-Cov-2 in mink farms

- Occupational exposure to high levels of SARS-Cov-2 RNA in airborne dust (viability unknown)
- Mode of transmission (mink to mink, mink to human) still unknown
- Risk of environmental exposure appears to be negligible

COVID-19 clusters in cool work areas (e.g. slaughterhouses, meat packing)

- Many questions!
- Role of temperature, relative humidity, air recirculation, shouting...?
- Migrant workers: housing, commuting



Sampling in (cool area of) Dutch slaughterhouse

- 6 positive surface swabs (6/61)
- 1 positive personal air sample: worker had positive test (1/12)
- Stationary air samples, ventilation system filters, etc all negative

Air/environmental sampling is difficult to conduct (too late!) as humans are the source: preventive measures are taken, cleaning/disinfection



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