

# Waterborne outbreak in Nokia, December 2007

Jari Keinänen  
Ministry of Social Affairs and Health



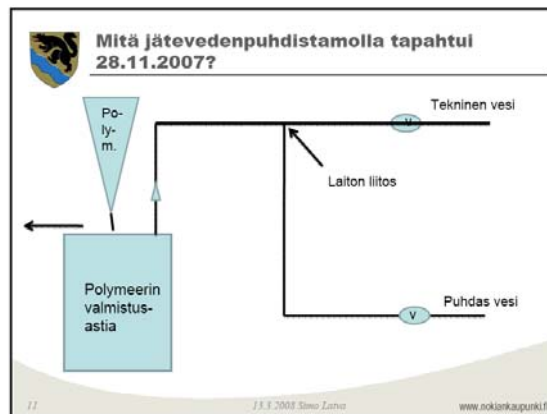
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## Waterborne outbreak in Nokia

- Purified sewage water (>400,000 litres) was mixed with household water 28-30.11.2008
  - > 10,000 residents were exposed to contaminated water
  - At least 1000, probably several thousand people got ill
  - No deaths associated with the outbreak recognized
  - Large economical consequences

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Wednesday 28.11.2008

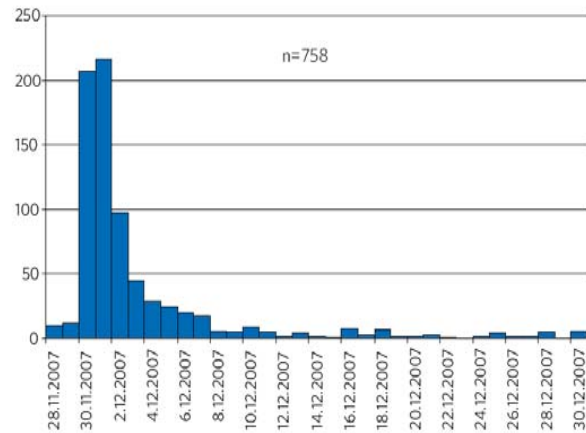


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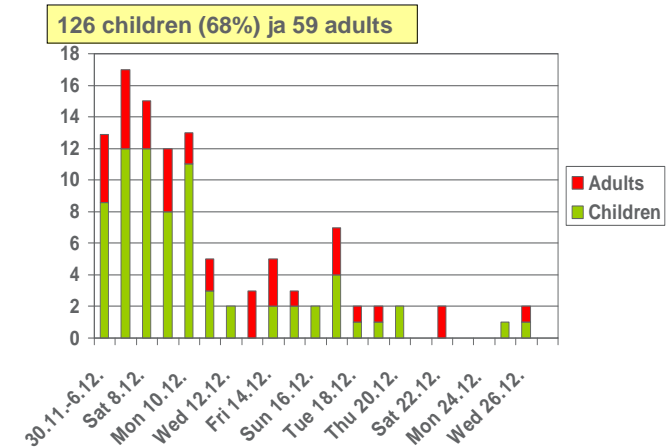
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## Consultations at health centre 28.11-30.12



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## Hospitalizations at University Hospital 30.11-27.12



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## Main pathogens and symptoms

- **Pathogens**
  - *Campylobacter jejuni*
  - *Giardia lamblia*
  - Norovirus
  - *Salmonella enteritidis*
- **Symptoms**
  - Diarrhea, fever, vomiting, ect.

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## Action in the waterworks

- immediate actions
  - flushing the polluted network
  - chlorine concentration up to 5 mg/l
  - water boiling orders by the health protection authorities
- action after 9.12.2007
  - cleaning the network
    - water-air-method
    - chock chlorination also in the building networks
- Normal use on 18 th february 2008
- normal chlorine concentration on 14 th march 2008

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## Governmental action

- Needed especially 5.12.2007 when the main pipeline in Nokia was broken and the Health authority gave temporary orders that consumers in hole Nokia can not use water at all
  - Ministry of Social Affairs and healt was leading the case inside government
  - send the letter of request to army
    - help the City of Nokia especially in distribution of water to the public

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## Further actions

- Epidemiological study (large scale questionnaire)
- National study of the water equipment in buildings made by local authorities and waterworks together
- guidelines for waterworks of the communication in crisis situations
- guidelines for local health authorities of the preparedness for emergency situations
- economical consequences assessment
- police investigation
- accident investigation board

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## Questionnaire study

- Collaboration between KTL, University Hospital, Nokia municipaltiy, and University of Tampere
  - Characterize the outbreak descriptively
  - Estimate the total number of ill
  - Verify the epidemiological association between pathogens in water and illness
  - Assess the psychological effects of the outbreak
  - Estimate the costs (health economical) costs of the outbreak
  - will be ready in the end of this year

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# CITY OF NOKIA

Connecting  
pipelines



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