

# European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*

## COST Action TD1105

**INTERNATIONAL WG1-WG4 MEETING on**

***New Sensing Technologies and Methods for Air-Pollution Monitoring***

**European Environment Agency - EEA  
Copenhagen, Denmark, 3 - 4 October 2013**

**POSTER SESSION**

Action Start date: 01/07/2012 - Action End date: 30/06/2016 - Year 2: 2013-2014 (*Ongoing Action*)

## Characterization of exposure to carbon nanotubes in an industrial facility



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Function in the Action: ESR

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# Short Term Scientific Mission (STSM)

## STSM

To strengthen collaboration within the Action's transnational network at two of the Action's partner institutions



**Training:** Aerosol training course "*Measurements of atmospheric aerosols: Aerosol physics, sampling and measurement techniques*"

**Research on indoor environments:** ongoing



- Have new contributions and potential new research paths while developing PhD study in the framework of Marie Curie Actions - Initial Training Networks (ITN)
- Has helped forge strong links between the research groups involved and this will lead to further collaborations in the future

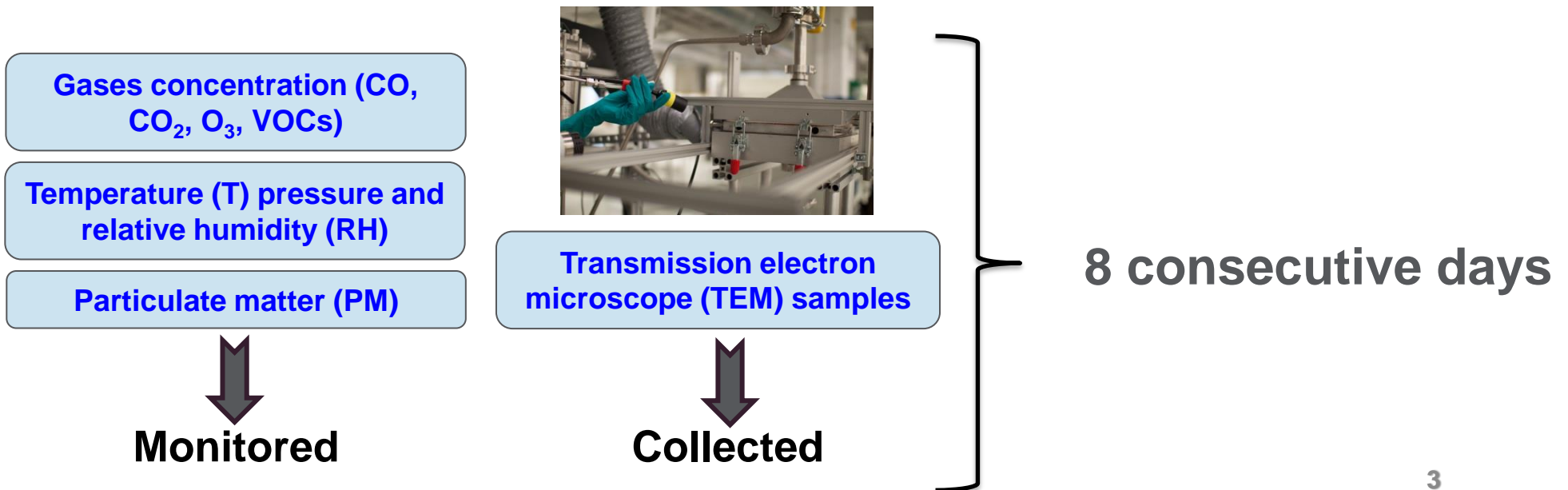
# Scientific Context and Objectives

Workers in CNTs-related industries are potentially at risk of being exposed to nanoscale particles through inhalation

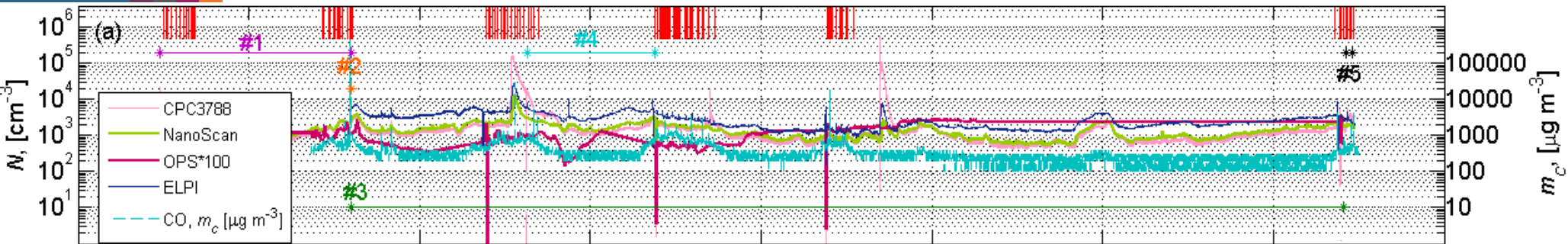
However, the current literature is lacking of information on workers' personal exposure for CNTs



Workers exposure to CNTs while manufacturing semi conductive thin films was conducted



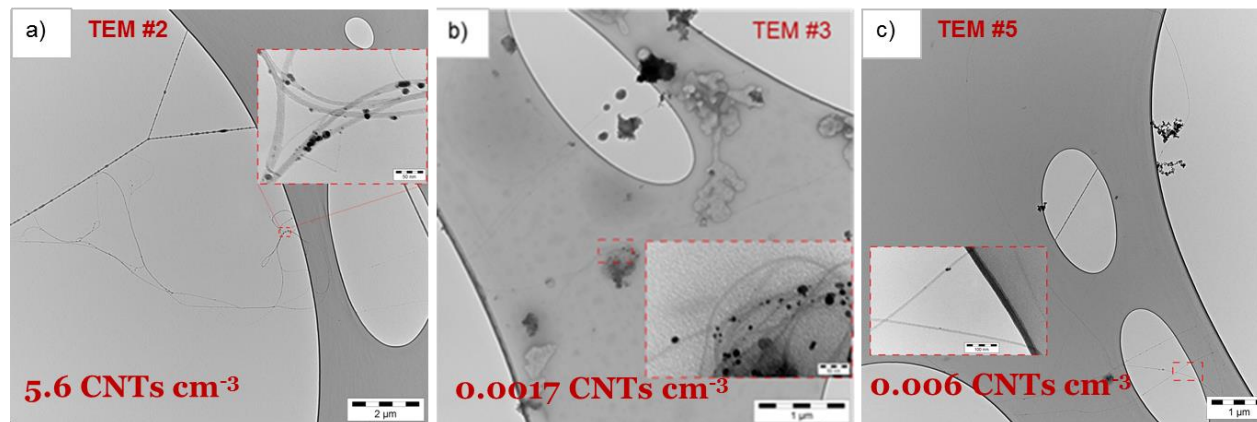
# RESULTS



Average concentrations during work day hours between 08h00-17h00 were clearly higher than non-activity hours.

## CNTs exposure occurred

- TEM images confirmed the presence of CNTs in the workplace.



TEM images of CNTs particles sampled from (a) CNTs films manufacturing without local ventilation system, (b) worker breathing zone and (c) reactor cleaning operation (44 min)

# CONCLUSIONS

- Although some coincidences, there is no evidence that the increasing emissions into the workplace are related to CNTs production process and caused by the opening reactor times;



**There were CNTs in the air but the exposure concentrations were lower than REL of  $1 \mu\text{g m}^{-3}$  (NIOSH, 2013)**

- Scaling-up of the production should be safe if local exhaust ventilations are applied properly to the collection chambers and exhaust flow from collection chamber is increased

## Acknowledgements

This work was supported by the Marie Curie Actions - Initial Training Networks (ITN) (PITN-GA-2012-315760) and COST Action TD1105-14937. The authors gratefully acknowledge A. J. Koivisto and A. K. Viitanen from Finnish Institute of Occupational Health for their technical support.

**Thank you for your attention!**