

CleanAir@School

**MAKE AIR QUALITY YOUR
NUMBER 1 PRIORITY**



Instead of taking a car or bus to go to school and releasing harmful gases and pollution you could try to cycle, walk, scooter, skateboard or park and stride to reduce the amount of pollution cars and buses make.

Source: © Misha Biswas.

**Face-to-face meeting
13 December 2019
Copenhagen, Denmark**

*Anke Lükewille
Michel Houssiau
Evrin Öztürk*

**Joint EEA/EPA Network
Citizen Science Initiative on
Air Quality**



Status participants (December 2019)

1. Austria (observer)
2. **Estonia**
3. ***Belgium, Flanders***
4. Iceland (observer)
5. Ireland
6. **Italy (Isprambiente)**
7. Malta
8. **Netherlands**
9. Slovakia (?)
10. **Spain**
11. Switzerland (observer)
12. **United Kingdom, Scotland**
13. *United Kingdom, Wales (?)*



Agenda 13th December 2019 (1)

EPA Network / EEA Citizen Science Initiative CleanAir@School

Fourth Face-to-Face Meeting

Friday, 13 December 2019

European Environment Agency (EEA), Kongens Nytorv 6, 1050 Copenhagen K, Denmark

Draft Agenda v2

- | | |
|----------------------|---|
| 09:00 – 09:30 | <i>Welcome and general update on <u>CleanAir@School</u> (EEA)</i> |
| 09:30 – 11:00 | <i>Project status, plans, challenges, needs – roundtable (EPAs)</i>
<i>A short presentation by each EPA participating in the meeting (15 - 20 minutes plus discussion)</i>

Luca Demicheli, <u>Isprambiente</u> (Italy)
Stephanie Long, Ireland
Graham Applegate & Colin Gillespie, Scotland (UK)
Stefano Miceli, Malta |
| 11:00 – 11:30 | Coffee break |



Framing the EPA Network / EEA initiative's objectives

1. To raise public awareness of air quality and to **highlight on-going activities of the participating organisations.**
2. To demonstrate how such initiatives may complement 'official' air quality monitoring to provide **better knowledge of local AQ.**
3. **To support the European Commission's reporting and monitoring fitness check: *Action 8: 'Promote the wider use of citizen science to complement environmental reporting'.***
 - Stepwise actions leading to the **development of guidelines in 2019**

- ✓ Updates of the CleanAir@School web portal:
<https://epa-citizen-science.discomap.eea.europa.eu/>

HOME



European Environment Agency



This portal contains related information, documents, guidance and services linked to joint [Environment Protection Agencies \(EPAs\) network](#) and [European Environment Agency \(EEA\)](#) for citizen science initiative on air quality.

EEA is responsible for the overall coordination of this initiative, while the EPAs are responsible for the outreach to local schools and the development of specific project plans in their countries.



Air pollution

 Intro  EU policies  EEA activities

Subtopics

-  Air pollution sources
-  Air quality concentrations
-  Air quality index
-  CleanAir@School
-  Explore air pollution data
-  Health impacts of air pollution
-  Improving Europe's air quality measures reported by countries

Air pollution is the biggest environmental health risk in Europe



CLEAN AIR FORUM

28 and 29 November 2019
Bratislava, Slovakia

[EU Clean Air Forum | European Commission](#)

CleanAir@School contribution is [here](#)

CleanAir@School



Brussels, 28.11.2019
SWD(2019) 427 final

COMMISSION STAFF WORKING DOCUMENT

FITNESS CHECK
of the

Ambient Air Quality Directives

Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air

and

Directive 2008/50/EC on ambient air quality and cleaner air for Europe

{SEC(2019) 426 final} - {SWD(2019) 428 final}

Citizen science mentioned in the fitness check document

“Recently, citizen science monitoring campaigns have successfully used **low-cost sensors to increase public awareness and public engagement on air quality issues** (Box 2).”

“Box 2 – Curieuze Neuzen

The *Curieuze Neuzen* (Curious Noses) project is an example of a citizen science project in which citizens measured air quality using NO2 **passive sampling tubes** in Flanders in Belgium. The project involved 20 000 citizens who measured the air quality near their own houses in the spring of 2018. The results of this project have been visualised at <https://curieuzeneuzen.be/>”

Other comments focused on the need for the air quality legal framework to be adaptable to new approaches to measure air quality, such as **citizen science methods, which can help raise awareness but is not suitable for assessing compliance with air quality standards as the of precision of data is lacking.**

Table A11.3 – Information to the public in the case studies²⁵⁷

Ireland	Air Quality Index for Health (AQIH)	
	Periodic Air Quality bulletins and reports	
	Citizen engagement and citizen science	
	Historical data on air quality publicly accessible	
	Real-time localised particulate matter monitoring data	

TITLE ...

Contents

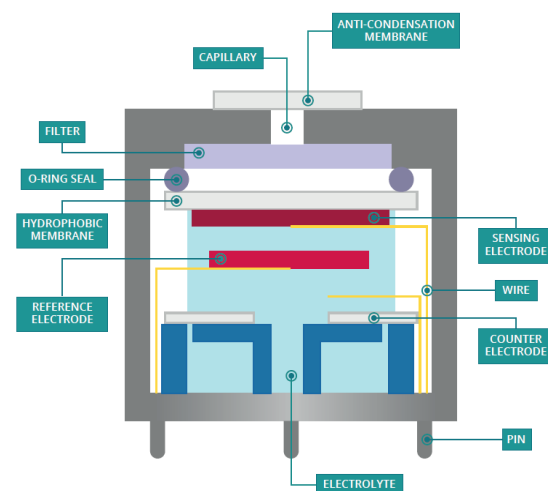
Contents.....	1
Summary.....	3
Engaging citizens in measuring air quality using low-cost devices.....	5
CurieuzeNeuzen Vlaanderen — 'the largest citizen science project on air quality to date'.....	6
New Year's Eve fireworks — using low-cost sensors to detect peaks in particulate matter.....	9
Joint EPA Network/EEA CleanAir@School initiative.....	10
CleanAir@School initiative in Malta.....	11
CleanAir@School initiative in Scotland, United Kingdom.....	13
Luftdaten.info 'grass roots' initiative — measuring air quality and joining a network.....	15
Low-cost measuring devices — how do they work?.....	20
Passive air pollutant samplers.....	23
Electronic and optical sensors for measuring air pollutants.....	24
Metal oxide gas sensors.....	25
Electrochemical gas sensors.....	25
Photoionisation detectors.....	26
Particulate matter sensors.....	27
Ensuring the quality and reliability of low-cost measuring devices.....	29
Tests and calibrations by manufacturers.....	29
Calibration against official air quality monitoring stations.....	29
Calibration exercises provided by national research institutions.....	30
Artificial intelligence — machine learning.....	30
Representativeness in space and time.....	31
Connecting sensors in networks and communicating results.....	32
Deploying low-cost sensors.....	32
Joining a network and sharing data.....	32
Combining data from a larger number of measuring devices.....	33
Issues to consider when setting up an air quality project using a network of monitoring devices.....	33
How is air quality officially monitored in Europe?.....	35
New thinking on air quality — what is the future for low-cost measuring devices?	38
Using low-cost measuring devices to complement official measurements.....	38
Towards the future.....	38
References.....	40

Figure 14: Passive sampler for measuring NO₂ at Brückenstraße, Berlin Mitte, Germany



Source: © Paul Herenz, Senatsverwaltung für Umwelt, Verkehr und Klimaschutz Berlin.

Figure 16: Schematic operation of electrochemical sensors



Source: EEA.

European Environment Agency



Task in the 2020 action plan of the ETC/ATNI (1)

OCP/EEA/ACC/18/001-ETC/ATNI

Action Plan

Work Plan 2020, ver. 04.11.2019

1.1.2.2 Relationships and impacts of public involvement on the air quality situation

Main managers

- Suggested ETC manager: Sonja Grossberndt (NILU)
- Suggested EEA project manager: Alberto González Ortiz

Background

Air pollution and its impacts on human health have gained more and more public attention in the recent years. People are now more aware of the effects of pollutants on health, are conscious of the power they have as consumers and are involved in activities of citizen science. For their part, environmental NGOs are more proactive, with some having initiated court cases against competent authorities for poor air quality.

The issue of air pollution is also high on the political agenda. For example, the European Commission is finalizing the fitness check of the Ambient Air Quality Directives, has launched new infringement procedures and has held its second Clean Air Forum at the end of 2019; the European Court of Auditors has assessed the implementation of the Directives; and the World Health Organization held its First Global Conference on Air Pollution in November 2018.

At the same time, voices questioning the scientific facts are gaining attention, an example being the recent controversy in the German media whereby the effect of NO₂ concentrations on health were called into question.

In parallel, many air quality plans and programmes include measures to raise public awareness. It is thus of interest to understand the different approaches that competent authorities take towards awareness raising and how they engage with citizens on air quality issues.

In 2019, EEA published a report on low-cost devices to monitor air pollution. The report reviews the functionality and utility of such devices, including passive samplers and low-cost sensors and documents initiatives where citizens have used low-cost devices to monitor air pollution. The proposed task should build on this report and should not duplicate the work already done to explore the impact of citizen science initiatives on air quality policies and measures.



Task in the 2020 action plan of the ETC/ATNI (2)

Expected main output

- Eionet Report on the role of public awareness in efforts to improve air quality.

Subtasks

Subtask 1: Producing an Eionet Report on the role of public awareness in efforts to improve air quality.

The report should contain the following elements:

- The range of measures designed to raise public awareness included under the air quality plans and programmes reported to EEA under the H-K dataflows will be assessed. The different types of measure will be described and a systematic overview provided.

32

OCP/EEA/ACC/18/001-ETC/ATNI

Action Plan

Work Plan 2020, ver. 04.11.2019

- Three or four case studies will be identified where either citizens or NGOs have taken action to improve air quality by influencing policies and measures, either by lobbying or through court action. Each case study will be briefly described and the impact on measures to improve air quality will be assessed. Possible examples may include legal action taken by the UK-based NGO ClientEarth against the UK government in 2017 and 2018, or legal action taken by a French citizen and her daughter to sue the French authorities for damages over ill health caused by air pollution. The case studies should be agreed at the kick-off meeting.



Agenda 13th December 2019 (2)

CleanAir@School

11:30 – 12:30

Continuation: Presentations by EPAs

Alberto Campos García & Jaume Targa, Spain

Helen Heintalu, Estonia

Hester Volten, Netherlands

12:30 – 14:00

Lunch break

14:00 – 14:15

José Miguel Rubio Iglesias (EEA)

13 December 2019 | CleanAir @ Schools meeting



**CITIZEN SCIENCE FOR
ENVIRONMENTAL MONITORING**

**EU Guidelines
Status and Progress**

Jose Miguel Rubio Iglesias (EEA)

European Environment Agency 

Agenda 13th December 2019 (3)



14:15 – 15:30

Planning for Q1 in 2020, ALL

- *Summary and presentation of CleanAir@School results in 2020*
 - How could the 2018 CurieuzeNeuzen Vlaanderen data be used (discussion with Katrien Smet)?
 - EEA viewer, showing also measurement results (!)
 - EEA briefing summarising results in Q1 of 2020 (!)
 - Poster competition, results presented at the EPA Network (Directors) meeting in Berlin on 20th and 21st of April 2020, which will take place back to back with the EPAs' Citizen Science Interest Group meeting on 22nd April (?)



Agenda 13th December 2019 (4)

- *Future of the CleanAir@School initiative*

- Cooperation of EPAs on CleanAir@School activities in 2020 (?)
- Participation in future EU Research projects (Horizon 2020, e.g.), including EEA Work Package (?)
- Others (?)

15:30 – 16:00

Coffee break (*room for bilateral etc. discussions*)

16:00 – 16:30

Lessons learnt – a first critical analysis (EPAs, EEA)

16:30

End of the meeting

CleanAir@School

Thank you for your cooperation!



Have a safe trip home. Merry Christmas!