AWARENESS RAISING ACTIONS IN SLOVENIA

Version 1

04.2018

Awareness raising actions in Slovenia

As part of awareness raising campaign in Slovenia the National Institute for Public Health was involved in different activities with the main aim to inform and raise awareness about the issue of indoor air quality, especially in environments frequented by children. The actions started in 2017, and they will continue in 2018 and 2019.

1. Actions

The awareness raising campaign was composed of communications for informing and understanding, awareness and action. By April 2018, the following activities were carried out:

A. Specific meetings with school pupils and their families

a) Informing parents and teachers of 12 chosen schools about the project and importance of IAQ

b) Presentation on the importance of the indoor air quality to pupils in the classrooms, where measurement campaign was carried out (12 schools)

B. Specific meetings with school staff

We approached school staff:

- Directly through emails, phone calls, f2f meetings (12 chosen schools)
- By inviting them to Environment Quality Forums

The main aim was to inform them about the importance of indoor air quality, influence of bad air quality to human health and about different actions they could do to improve air quality.

C. Dissemination of information materials

Dissemination of leaflet and brochure among different target groups.

D. Use of national Facebook page

E. Distribution of the brochure about the project among school managers, teachers, parents, stakeholders

Distribution of PDF version of the brochure in March/April 2018, distribution of physical brochure in May/June 2018

F. Presentation about the results of the project at local conferences, events.

a) Presentation of the project at the Ministry of Education, Science and Sport in Slovenia as part of the meeting of the CRP project "Analysis of the situation in the field of architecture of public kindergartens and schools in Slovenia - recording, evaluation and protection of examples of quality (sustainable) architectural practice" on 23rd of January 2018. There were present also the representatives from Municipality of Ljubljana.

Lecture: Harmful substances in kindergartens and schools and their consequences on the health and well-being of children, the importance of ergonomically designed equipment

Author: mag. Simona Uršič, NIJZ

b) Environmental conference - 5.-6.4.2018 - Moravske toplice, Hotel Ajda

event: "National Environmental Protection Program and its Dialogue with Local Communities"

Website: http://www.bistra.si/nacionalni-program-varstva-okolja-in-njegov-dialog-z-lokalnimi-skupnostmi/

Lecture: Impact of air quality in the indoor environments on human health (short presentation of the project InAirQ)

Authors: dr. Andreja Kukec, dr. Anja Jutraž, Peter Otorepec, mag. Simona Uršič, Andrej Uršič (NIJZ)

e) Congress – 20.-23.3.2018 - SkyCity Convention Centre, Auckland, New Zealand

Event: 15th World Congress on Environmental Health

Website: http://www.2018wceh.org/

Lecture: Meta-analysis of effect of atmospheric pollution on a birth outcomes: evidence for future research (short presentation of the project as part of this lecture)

Author: dr. Andreja Kukec (NIJZ)

G. Articles

a) Article "Indoor air quality in Slovenian pre-school buildings and InAirQ project" in eNBOZ – E-newsletter on Communication Diseases and Environmental Health, March 2017, Nr. 2 ISSN 2232-3139

http://www.nijz.si/sites/www.nijz.si/files/uploaded/enboz_marec_2017.pdf

b) Publication of per-reviewes abstracts of 1st Environment Quality Forum, February 2018

Website: http://www.nijz.si/sl/inairq

Editor: Andreja Kukec; Reviewer: Simona Uršič

PROGRAM KONFERENCE

Pozdravna nagovora	
9.00-9.15	*Predstavnik Ministrstva za zdravje*
	Peter Otorepec *Predstojnik Centra za zdravstveno ekologijo, Nacionalni inštitut za javno zdravje, vodja projekta InAirQ v Sloveniji*

Strokovni del	
9.15-9.30	Kakovost zunanjega zraka v Sloveniji *Janja Turšič*
9.30-9.45	Vpliv onesnaženosti zraka na bolezni dihal pri otrocih *Marina Praprotnik*
9.45-10.00	Metodološki pristopi in izzivi na področju ocenjevnja vplivov kakovosti zraka na zdravje v notranjih prostorih *Andreja Kukec*
10.00-10.15	Izboljšanje kakovosti notranjega zraka v izobraževalnih ustanovah z izborom gradbenih proizvodov *Mateja Dovjak*
10.15-10.30	**Odmor**
10.30-10.45	Meritve ogljikovega dioksida (CO_2) v vzgojno-izobraževalnih ustanovah v Sloveniji: pregled stanja *An Galičič*
10.45-11.00	Arhitekturni pristopi pri zagotavljanju kakovosti zraka v notranjem prostoru: prikaz primera *Anja Jutraž*
11.00-11.15	Kako naj v šoli zaznamo slab zrak? *Sonja Šorli*
11.15-11.40	**Razprava**

Nacionalni inštitut za javno zdravje, 3. februar 2017 1

H. Environment Quality forums

a) 1st Environment Quality Forum in Slovenia (3rd of February 2017, at the National Institute for Public health in Ljubljana, 30 participants, 7 lectures).

Lectures:

- Janja Turšič: Outdoor air quality in Slovenia
- Marina Praprotnik: The effect of air pollution on respiratory diseases in children
- Andreja Kukec: Methodological approach and challenges in the field of air quality assessment
- Mateja Dovjak: Improving indoor air quality in educational institutions with the selection of construction products

- An Galičič: Measurements of carbon dioxide (CO2) in educational facilities for children in Slovenia: State of the art
- Anja Jutraž: Architectural approach to providing indoor air quality: the case study
- Sonja Šorli: How to detect poor air quality in schools

b) 2nd Environment Quality Forum in Slovenia (14th of September 2017, at the National Institute for Public health in Ljubljana, 20 participants, 5 lectures and 1 workshop). Participants: 5 primary schools, 2 secondary schools, 3 other organizations, from 5 different cities) - all together 22x

Lectures:

- Marina Praprotnik in Peter Otorepec: Effects of polluted indoor air on health
- Anja Jutraž and An Galičič: Presentation of the state of elementary schools in the Ljubljana health region from the aspect of the indoor air quality
- Andreja Kukec: Indoor air quality in primary schools: SWOT analysis (strengths, weakness, opportunities, threats)
- Anja Jutraž: Benchmarking: Review of good practices in the field of indoor air quality in school buildings
- Tanja Rejc: Presence of microorganisms, black carbon and carbon dioxide in the indoor air of kindergartens in Zasavje

Workshop: Active participants' involvement in EQF

WORKSHOP INDOOR AIR QUALITY

Name and surname, educational institution, role in the educational institution

PART 1: Assessment of the condition of the building and the premises in relation to the indoor air quality

OBJECTIVE 1: Identify the problems you face in ensuring the indoor air quality in your institution.

Starting points: legislation (legal and secondary legislation); financing system; state of the building (age, construction materials, installations,...); location of the building; employees...

OBJECTIVE 2: Identify the sources that affect the indoor air quality in your institution.

INDOOR SOURCES OF AIR POLLUTION

OUTDOOR SOURCES OF AIR POLLUTION

Starting points: *Indoor sources*: ventilation, building materials, equipment, arrangement of premises, maintenance ... *Outdoor sources*: traffic, factories, individual fireplaces...

PART 2: Approaches to improve the indoor air quality

OBJECTIVE 2: Identify all PARTICIPANTS that you think are important in the process of ensuring and improving the quality of air in your institution.

PARTICIPANT	ROLE

HELP: A list of some people involved in the design, use and maintenance of school facilities.

GOVERNMENT	PROFESSION	PUBLIC (=USERS)
INSTITUTIONS: Ministry of education, science and sport, Ministry of health, Ministry of the environment and spatial planning **NATIONAL INSTITUTIONS:** National institute for public health, Slovenian environment agency, educational insitutions (Faculty of medicine, Faculty of Health Sciences, Faculty of Architecture, faculty of Civil and Geodetic Engineering etc.) **MUNICIPALITIES:** Municipality of Ljubljana	**EMPLOYEES:** Administration, pedagogical staff, technical/ support staff (janitor, cleaners etc.) **DESIGNERS/PLANNERS** Architects, Construction managers, structural engineers, MEP, urban planners, contractors **HEALTH WORKERS AND PUBLIC HEALTH EXPERTS** Public health experts, pediatricins, docors, environmental experts etc	**PARENTS** (indirect impact) **KIDS, PUPILS, STUDENTS** (direct impact) **COMMUNITY**

I. Informing Municipality of Ljubljana, Ministry of Education and members of University of Ljubljana about the project

Meeting at the Ministry of Education, Science and Sport in Slovenia as part of the meeting of the CRP project "Analysis of the situation in the field of architecture of public kindergartens and schools in Slovenia - recording, evaluation and protection of examples of quality (sustainable) architectural practice", November 2017

J. Collaboration on the research project at the Gymnasium Ljutomer

Title: "Vpliv dejavnikov na kakovost notranjega zraka na Gimnaziji Ljutomer in smernice za izboljšave"/ "Influence of factors on the indoor air quality at Gymnasium Ljutomer and guidelines for improvement"

Authors: Klara Dragović, Rok Lajnšček, Cirila Štabuc

Mentors: dr. Marija Meznarič, prof. bio. in kem., dr. Anja Jutraž, mag. inž. arh. (NIJZ), doc. dr. Andreja Kukec, dipl. san. Inž (NIJZ), mag. Simona Uršič, dr.med. (NIJZ)

School year 2017/2018

Award: Silver award at the regional meeting of young researchers

Gimnazija Franca Miklošiča Ljutomer
Prešernova 34, Ljutomer

VPLIV DEJAVNIKOV NA KAKOVOST NOTRANJEGA ZRAKA NA GIMNAZIJI LJUTOMER IN SMERNICE ZA IZBOLJŠAVE

Raziskovalno področje: Ekologija z varstvom okolja

Raziskovalna naloga

Avtorji:
Klara Dragović, Rok Lajnšček, Cirila Štabuc
Mentorji:
dr. Marija Meznarič, prof. bio. in kem.
dr. Anja Jutraž, mag. inž. arh.
doc. dr. Andreja Kukec, dipl. san. inž
mag. Simona Uršič, dr.med.

Ljutomer, 2017/2018

POVZETEK

Dijaki Gimnazije Franca Miklošiča Ljutomer na šoli preživijo približno šest ur na dan, zato se nam je zdelo pomembno izvedeti, kakšna je kakovost notranjega zraka v šoli. V našo raziskovalno nalogo smo vključili štiri prostore na naši šoli: dve učilnici, kabinet in knjižnico. Kakovost notranjega zraka smo proučili s pomočjo merjenja koncentracije CO_2 , in delcev z aerodinamskim premerom pod 2,5 µm ($PM_{2.5}$) in indeksa kakovosti zraka. Meritve smo izvedli z napravo Air Visual Pro, potem ko smo v literaturi poiskali ustrezna teoretična znanja. Dodatno smo z digitalnima merilcema izmerili še koncentraciji radona in formaldehida, meritve pa smo prav tako upoštevali pri oceni kakovosti notranjega zraka. Raziskava je pokazala, da je kakovost notranjega zraka **zaskrbljujoča**.

Ključne besede: Gimnazija Franca Miklošiča Ljutomer, kakovost notranjega zraka

ABSTRACT

The students of Gimnazija Franca Miklošiča Ljutomer spend about six hours a day at school, so we thought it would be really important to find out more about the indoor air quality in the school building.
Four rooms at our facility were included in this research project: two classrooms, a teacher's office and the library. The indoor air quality was determined by measuring the concentration of CO2, the $PM_{2.5}$ particles and the air quality index measured with the Air Visual Pro device after we had acquired the relevant theoretical knowledge from the literature. Additionally, we measured the concentration of radon and formaldehyde with digital meters, and the measurements were taken into account in the assessment of the indoor air quality. The research has shown that the indoor air quality in those four rooms is **alarming**

Key words: Gimnazija Franca Miklošiča Ljutomer, indoor air quality

K. Distribution of electronic newsletters

Distribution among professionals (AEC industry), members of the university (researchers and professors), primary and secondary schools, parents, municipalities and ministry etc.

L. Informing about the project on the NIJZ's website

http://www.nijz.si/sl/inairq

2. Target groups

We addressed following target groups:

- Municipal and regional institutions: Municipality of Ljubljana
- National public authority: Ministry for Education, Ministry of Health
- Educational institutions: University of Ljubljana (different faculties)
- Pupils of the involved schools and their parents: 12 chosen schools in Slovenia (at each school we presented InAirQ project to the parents of the pupils of 3rd school year and also to pupils).
- Management bodies of the schools and school staff: Network of healthy Slovenian schools, Secondary schools
- Building industry, real estate developers and contractors: invited to EQF in 2018
- Interest groups including NGOs: invited to EQF in 2018

Schools for Health in Slovenia: http://www.nijz.si/sl/slovenska-mreza-zdravih-sol

3. Key messages

The topics we have already presented at different events were:

- Basic information about the project
- Health impact of poor air quality
- Good practices and benchmark visits
- Intervention methods for air pollution
- Use of indoor materials and equipment
- Maintenance and managers' responsibility

4. Future work

In the future, we will focus mostly on development and organization of different **workshops:**

- Workshops for teachers
- Workshops for school staff
- Workshops for AEC professionals

Moreover, we are planning to organize one bigger **event for the presentation of results and dissemination** at the end of year 2018, where we will invite municipal and regional institutions and Municipality for Education.

Other planned activities are:

- **Sending target emails** to public health departments, to the departments dealing with the environment and to the school building authorities with the main aim informing about the project (planned for May/June 2018)
- **Specific meetings with school pupils and their families:** we will prepare the slideshow and informative materials about the pollutants characteristic of indoor air, their main sources and actions to be implemented to reduce indoor pollution and distribute them among different primary schools, where teachers will be

asked to present these material to school pupils in September 2018 and to their parents in September 2018

- **Production and dissemination of information materials:** production of material with action plans for different target groups, three types of material: (1) for school pupils; (2) for school staff; (3) for AEC professionals.
- **Use of national Facebook page:** informing about the results of the project (on-going)
- **Distribution of the brochure about the project among school managers, teachers, parents, stakeholders:** started in April 2018, continuing till the end of the year
- **Presentation of the project and results on regional meetings of primary schools:** in 9 Slovenian cities
- **Presentation about the results of the project at local conferences/ events:** Congress 28.11.-1.12.2018, Ljubljana, Cankarjev dom: 11th European Public Health Conference; https://ephconference.eu/; Lecture/Poster: Predstavitev rezultatov projekta (vpliv kakovosti zraka na opazovane izide standardizirano na moteče dejavnike) / Presentation of the results of the project (the impact of air quality on the observed outcomes standardized on disturbing factors) - *proposal*
- **More communication activities in the social media:** e.g. TV, radio, newspaper, Facebook – activities are planned after September 2018, when we will have the results of the measurement campaign.
- **Scientific article in 2018, for the publication Public health** (Javno zdravje), http://www.nijz.si/sl/revijajavnozdravje - "Presentation of the project InAirQ; authors: Anja Jutraž, Andreja Kukec, Peter Otorepec, Simona Uršič, Andrej Uršič, Sonja Šorli - *proposal*
- **Organization of the third meeting of EQF** to inform about project progress, involve stakeholders in the creation of local indoor air quality action plans thus ensuring broad engagement of and communication to stakeholders: focus on health impact and workshop (*Integrated approach towards designing healthy schools*)