activity update

Getting results!

According to the project time plan, after finishing field studies in schools in 24 countries, the SINPHONIE project (Schools Indoor Pollution and Health: Observatory Network in Europe) arrives at some new milestones: preparing a common European database, conducting analysis, health risk assessment, and developing new guidelines and recommendations. What follows is a brief overview of activities carried out between October 2011 and March 2012.

- Most of the field activities in schools were completed by April 2012. Environmental and health monitoring were carried out in parallel. School building checklists and environmental measurements provided data about indoor air quality (WP3), while health questionnaires, attention testing and spirometry measurements contributed information about children's health status (WP4).

- A global database structure for data entry and analysis was also finalised (WP5), and the final database was uploaded to the Partners' area of the SINPHONIE website. Following the completion of the field studies, national coordinators have begun the task of data entry.

- WP8 on communication has developed the Partners' page of the website, which contains all relevant information for project partners, including protocols and national databases. Another component of WP8 is to assist with the entry of national data into the website.

Children's health on the European agenda

Two experts assess the SINPHONIE project's value in the context of related initiatives to improve the monitoring of indoor air quality in European schools.

On school buildings and children's health

Eduardo de Oliveira Fernandes, Instituto de Engenharia Mecânica - Faculdade de Engenharia da Universidade do Porto, Portugal

In the Parma Declaration, issued in March 2010, environment and health ministers from WHO Europe and the EU stated their aim "to provide each child with a healthy indoor environment in childcare facilities, kindergartens, schools and public recreational settings, implementing WHO´s indoor air quality guidelines."

Children are among the most vulnerable groups of the population in terms of exposure to air pollution. According to the 2008 EnVIE project and the document "Promoting actions for healthy indoor air", produced in 2011 for the EC Directorate General for Health and Consumers, exposure to air indoors is up to 10 times greater than exposure to outdoor air, the principal source of indoor air pollution.

The SINPHONIE project:

- is a response to political orientation from WHO/EU and provides inputs for future policies on IAQ;

- contributes to clarifying the importance of school location in terms of ambient air impact; and

- helps to identify the role that the home environment plays in children's health.

On SINPHONIE and the harmonisation process: methodologies for assessing indoor air quality

Stelios Kephalopoulos, Chemical Assessment and Testing Unit of the Institute for Health and Consumer Protection of the Joint Research Centre

Improving IAQ in Europe and assessing the contribution of existing and future IAQ policies in reducing the burden of disease associated with exposure to indoor air pollution requires the availability of robust and comparable data across Europe.

In order to provide such data, the EC has begun developing a harmonised framework of criteria, protocols and techniques for monitoring indoor air quality in various environments. The PILOT INDOOR AIR MONIT project, which is coordinated by the Joint Research Centre on behalf of DG SANCO, is now implementing pilot studies in various indoor settings across the EU. The protocols and techniques recently developed by the SINPHONIE project provide a major contribution to this challenging task.

WP5 meeting on data management

The WP5 meeting on SINPHONIE database structure and data management, held on February 15, 2012, was organised in Paris by Isabella Annesi-Maesano, of UPMC Paris06. The agenda focused on:

- Field studies in schools, which are due to be completed by end-April.
- SINPHONIE database structure, for which Excel sheets have been prepared, including overall data and country files.
- Data validation/cleaning, data reduction and regression analysis.
- Statistical analysis of health problems, based on the health monitoring of children and teachers; establishing links between school environments and IAQ and the short and long-term health of teachers and children; descriptive and inferential analysis; predictive models; case studies.

Discussion questions: Which health outcomes and pollutants should be considered first? How can liaisons be ensured with WP leaders? What is the feasibility of predictive models? What is the importance of pattern analysis? How can new guidelines and recommendations support improved IAQ in schools?

The meeting of the Technical Committee in Porto at the end of April is an opportunity to discuss field study results. Deliverables for the progress report must be prepared by the end of the month.

Field activities focus on indoor pollution and health

Environmental and health monitoring took place between October 2011 and March 2012 in approximately 120 schools in 24 countries. Schools were selected on the basis of criteria drawn up by WP3.1, which included the area surrounding the school and type of building ventilation. Country coordinators sent invitation letters and project information brochures to principals of the selected schools.

Parental permission had to be obtained prior to the health tests and before asking children to complete questionnaires requiring information about family medical history and the home environment.

The field studies were carried out over a one-week period in each school during which heating systems were operating.

Environmental monitoring covered:

1. 18 physical and chemical parameters (e.g. formaldehyde, CO_2, ventilation rate), indoors and outdoors in parallel over the course of five days (radon was monitored over a four-week period);
2. sampling for microbial and allergen determinants (e.g. indoor dust); and
3. specific fungal and bacterial markers in settled dust.

Before measurements were taken, school building checklists and cleaning staff checklists were completed by staff representatives to provide additional information about structural characteristics, cleaning routines, etc.

Health monitoring comprised:

1. questionnaires about the health status of children and teachers;
2. spirometry tests on children carried out by health experts, and only with parental consent;
3. attention testing in the classroom at the beginning and end of the school day, but not on the same day as the spirometry testing; and
4. an analysis of absenteeism, providing health experts with information about attendance rates between November 2011 and March 2012.

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Data to be structured, stored and made accessible

Philomena Bluyssen and Michel Böhms, senior scientists at the Netherlands Organization for Applied Scientific Research (TNO)

Data on school environments and the health status of children and teachers, collected in the course of the field studies, now needs to be structured, stored and made accessible. To achieve this, the SINPHONIE team will rely on Excel sheets. The templates have been prepared and divided into groups for the different countries.

Most countries are in the process of filling in the data gathered from the pilot schools via checklists, measurements, tests, questionnaires and registers. The database will eventually contain information on 24 countries, 123 schools, 492 classrooms, and about 10,000 children and 4,000 teachers. After validation and cleaning, the country files will be merged into a valuable resource for subsequent analysis during the project.

Field activity updates

Summaries from the national coordinators in eight of the 24 participating countries.

United Kingdom
UCL
The UCL team successfully completed winter monitoring in six schools in South East England. Based on previous experience, it was decided to guard the equipment used to monitor building ventilation systems. This proved a successful way to minimise data loss due to interference from the children. Despite the long questionnaires there was a great response from the children. Spring monitoring is due to begin in two weeks.

Belgium
VITO
Fieldwork was carried out in one primary school and one kindergarten. Both buildings have mechanical ventilation systems to control air intake and outflow. Materials and objects in the classrooms varied considerably, creating different indoor environments that might affect the results. The pupils took a great interest in the measurements and were keen to find out about their school's indoor environment.

Austria
IEH and UBA-A
Field studies began in five schools in Vienna in October 2011, and the last samples (radon and EDC) were taken in mid-December 2011. The field studies went very smoothly due to previous cooperation with the schools and excellent preparation. It was good to learn of the impact of earlier projects on teachers' awareness about indoor air pollution. The children were eager to learn about the project and the link between environment and health.

Finland
THL
Field work in three primary schools finished in December 2011. All measurements were taken during the heating season. The same three schools also took part in a seasonal variation study in September 2011. Thanks to the highly qualified and experienced team of field workers carrying out the exposure and health surveys, and to the collaboration among schools, pupils and teachers, the field work was implemented smoothly and successfully.

Portugal
IDMEC-FEUP and UAVR
Field studies took place in four schools and two kindergartens in Porto and Aveiro, covering 16 classrooms and involving 465 children. The school buildings were between 33 and 62 years old, all with natural ventilation and all but two located in urban settings. Mexedinho Primary School was selected for a case study on the effectiveness of ventilation in enhancing indoor air quality. Teachers, parents and pupils were very active and interested in the field studies.

Malta
UMalta
SINPHONIE is the first project to analyse indoor air pollution in schools in the Maltese islands. School authorities, staff, pupils and parents were keen to support the field studies and cooperated fully in activities. Valuable research experience was gained and, with the field studies successfully completed, the focus is now on uploading data to the project website, thus contributing towards the improvement of the indoor environment in Maltese schools.

Hungary
NIEH and REC
Field studies took place in six schools between November 2011 and February 2012, following initial school visits by the experts and country coordinator. During breaks, the experts presented the equipment used in the classrooms. The children responded well and asked lots of questions. They were excited about the spirometry tests. The field studies went smoothly as the schools were very helpful and interested in the findings.

Romania
UBB
During the field studies in late 2011 the research team enjoyed good collaboration with school principals, teachers and children, and the monitoring went smoothly. The children's questionnaires were completed in individual interviews, helping to focus the children's attention and inspiring their interest in the other tests. Children were keen to get good scores and were amused by the chance to grade their school and teachers in the questionnaires.

SINPHONIE and beyond

Sinphonie news talks to Luciana Sinisi, chair of the project's Advisory Committee.

sinphonie news: Based on your experience in the European Environment and Health (E&H) Process, what would be your key message regarding school indoor air quality and children's health?

Luciana Sinisi: First of all, it is essential to regard indoor air quality (IAQ) in schools, and the vulnerability of children's health, as priorities. Researchers need to build partnerships with schools and local authorities and to develop the skills needed to communicate IAQ issues and improve information dissemination. Institutions have to rethink their future research agenda and include IAQ among the priorities while promoting inter-sectoral cooperation to improve IAQ in schools.

sinphonie news: What are your expectations from the SINPHONIE project?

Luciana Sinisi: Following the SINPHONIE results, I look forward to more organised research and action on IAQ, especially in the school environment, and to the harmonisation of information on IAQ. We need a concrete and appropriate platform to plan legal and regulatory responses. SINPHONIE is huge in scale and I sincerely hope that the network will be maintained long after the project is over.

● **April 30, 2012**
2nd progress report
www.sinphonie.eu

● **October 30, 2012**
Final report
www.sinphonie.eu

● **April 26–27, 2012**
Technical Committee meeting, Porto, Portugal

● **September 11–12, 2012**
Final meeting, Szentendre, Hungary

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