

The Francilophone

Newsletter of Bruitparif, the noise
observatory in Ile-de-France

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Editorial

The dawn of this new year is the right time to unveil the main lines of the Observatory's perspectives for 2010.

On the agenda, the growing momentum of the "measurements" activity, especially with the deployment of a strengthened noise monitoring around the 3 Ile-de-France airports within the SURVOL study. The RUMEUR network will also be completed by the installation of new stations in Paris, Val de Marne and other Ile-de-France locations in partnership with local authorities. Other objectives for 2010 are the drawing up of a strategic plan for rail and road noise monitoring as well as a reinforced programme for noise documentation around Ile-de-France airfields.

The support to public policies will mainly revolve around the organisation of the Forum of the Ile-de-France Entities launched in 2009 and the construction of a regional repository through the aggregation of the noise maps.

Also in 2010, an upgraded Internet website will be launched and the awareness actions about the sound environment and the prevention of hearing risks will increase.

In the meantime, please receive my best wishes for health and success for you and your relatives.

Pascal Marotte

President of Bruitparif



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The Paris ring road
listened in!

Bruitparif
Observatoire du bruit
en Île-de-France

The Paris ring road

listened in!

With 35 km and more than 100,000 inhabitants along the way, the ring road is, according to the noise maps published by the City of Paris, one of the noisiest roads of the Capital. A victim of its own success, congested at certain hours, the ring road supports a quarter of the Paris traffic and represents an important link between Paris and the towns bordering it. In order to better understand how real these nuisances are, Bruitparif carried out a noise measurement campaign for a month. What are the sound levels at the different times of the day? What is the impact of acoustic protections? Is there a correlation between noise nuisances and air quality? Is noise unavoidable? We have investigated.

There are already data on the noise around the Paris ring road. In order to implement the 2002/49/EC European Noise Directive, the City of Paris has produced noise maps and published them on its website (www.paris.fr). Those were made through modelling, from road traffic and topography data (that is to say, relief, buildings, screens...), and show yearly average noise levels.

This approach gives a spatial image of the sound environment around the ring road but does not render the temporal variations of noise and the emergencies (horns, motor vehicles, especially noisy two-wheelers...). These aspects are at the heart of the local residents' concerns.

Among the questions that can be asked:

- Which periods are the noisiest or on the contrary the most quiet?

- What relations exist between noise, traffic conditions (flow, speed, saturation, traffic composition...) and the layout of the location (ring road raised or sunken in regard to accommodations,

presence of noise screens, impact of service roads...)?

- What is the dynamics of this noise and what is the contribution of emergencies (sirens, horns, two-wheelers)?

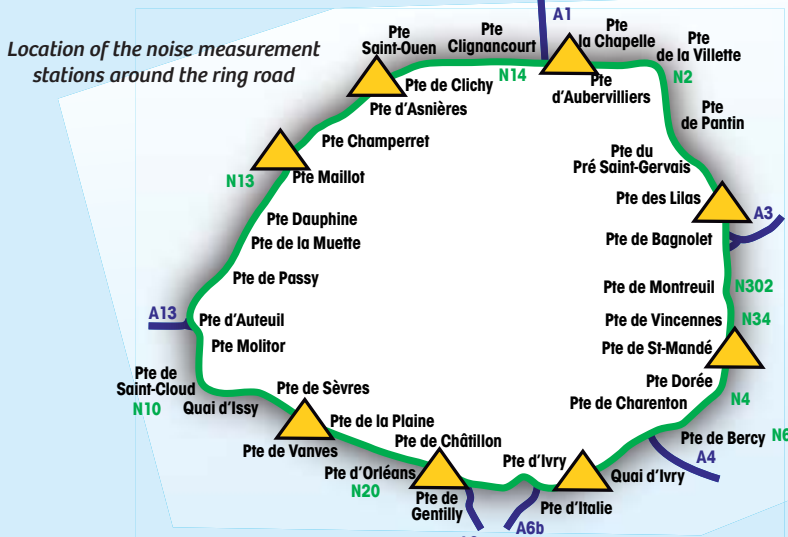
One measurement site every 700 metres

From these interrogations and in order to complete the noise maps made by the City of Paris and the 21 towns bordering it in Hauts-de-Seine, Seine-Saint-Denis and Val-de-Marne, Bruitparif launched a wide measurement campaign in spring 2009.

At the heart of the project, 8 permanent stations recorded 24/7 and second after second the noise generated by the traffic along the accommodations on both sides of the ring road. To complete this system, the laboratory vehicle, equipped with the most innovative technologies and autonomous in energy thanks

to integrated solar panels, carried out about 50 one-hour-long recordings, that is, one site every 700 metres.

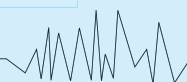
The goal was to have a homogeneous spatial distribution of the measurement sites around the ring road and to get at least one permanent station on each section located between two big motorway interchanges.



Permanent high noise levels

The results of the study present high noise levels all around the ring road. The measurements show very significant values as of 5 am and up to midnight. At night, the noise decreases a little but stays relatively high. The levels recorded in the 2-4 am period are only reduced by 7-9 dB(A) compared to the noisiest hours.

There are also few variations according to the day of the week, the night levels



can even be higher on weekends. The truth is, for the local residents exposed to the ring road, there is never any respite, neither at night, nor on weekends, not even during school holidays where only an average decrease of 1 dB(A) was recorded.

The impact of acoustic protections

Still, it is reassuring that the study demonstrates the efficiency of noise screens and other acoustic protections installed along the ring road. They offer an average gain of about 7 dB(A). A notable value when you know that an increase of about 10 dB(A) sounds twice as loud.

However, this good result needs to be moderated as the protections are mainly efficient for the accommodations located on the lower floors.

Between 100 and 1600 events a day above the background noise by 10 dB(A)

As for emergencies, which are the events that significantly – by more than 10 dB(A) – exceed the already high background noise of the traffic, they are especially numerous along the ring road and very dependent on the type of traffic (bursty or continuous) and on the presence of service roads with more or less traffic.

According to the layout of the surroundings of the 8 permanent stations, between 100 and 1600 emergencies were recorded every day. These emergencies can be related to especially noisy vehicles on the ring road (two-wheelers, HGVs, vehicles driving at an excessive speed), warning signals (horns, sirens), as well as isolated vehicles on the service road located between the ring road and the first row of accommodations.

In order to analyse more precisely the source of the emergencies generated by the ring road, the Bruitparif teams installed an expert measurement station within the Batignolles cemetery, a site bordering the ring road. This place was chosen because its sound environment is almost exclusively impacted by the traffic of the ring road.

Noise screens offer an average gain of 7 dB(A)

The results of these measurements show that some especially noisy two-wheelers and the sirens are the two main noise sources. It should be noted that significant emergencies (by up to 25 dB(A) on this site) were recorded in the middle of the night. Their intensity and their appearance in the night period make them a potential source of annoyance and of first-rate sleep troubles for the local residents. As for the sirens, they are essentially identified during the day and the evening when the traffic is saturated.

Not necessarily a temporal correlation between sound and air pollutions

During this campaign, the Bruitparif teams were able to compare the measurement data with those obtained by Airparif (the air quality observatory in Ile-de-France) during previous studies. The results show that, even though the road traffic is the main cause of these two pollutions, there is no systematic temporal correlation between the two nuisances.

Indeed, air quality is usually the most degraded at rush hours (for the nitrogen oxides and particles indicators) whereas the sound levels tend to be higher when the traffic decreases and the speed increases (as is the case of the 5-7 am, 11 am-1 pm and 9-11 pm slots). The noisiest

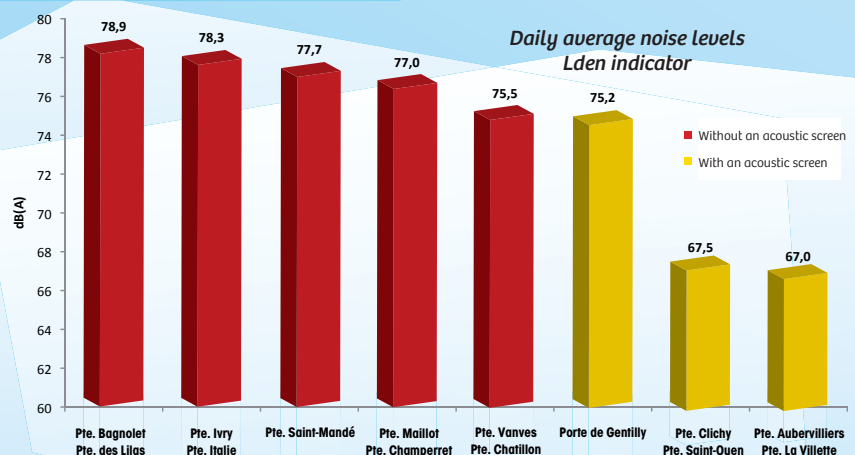
hours do not necessarily correspond to rush hours, nor to the hours with the most air pollutants.

All these elements lead us to develop a very close and overall interest, by also dealing with the service roads, in the issue of the noise nuisances generated by the ring road. Apart from the multiplication of acoustic protections, other means exist so that noise is not unavoidable.

To ensure quietness for the local residents, the priority is to decrease night noise. This could happen by decreasing the allowed speed or by limiting emergencies through awareness actions aimed at the drivers of especially noisy two-wheelers or at the people driving at an excessive speed...



The Bruitparif teams will continue to work on this topic, in particular by making a dynamic model of the noise on the Paris ring road.



The sound environment

Awareness actions

perceived by 2056 Ile-de-France students

Within the pilot noise measurement and awareness campaign organised at the initiative of the Ile-de-France Region and coordinated by Bruitparif, CIDB conducted a wide perception survey of 2056 high school students, 53% of which are boys and 47% girls, with an average age of 15.5.

How do teenagers perceive the sound environment of their high school? What are their practices in terms of amplified music? Do they know the potential risks for their health? What precautions do they take? Here are the main answers.

Noise in high school...

Some places are perceived as particularly noisy by a majority of students, the canteen (88%) and the corridors (82%) especially, as well as some outside spaces like the schoolyard (81%) or the covered playground (68%).

Chairs moving (86%), shouts in the corri-

dors (85%), noises coming from the toilets (79%) and the bell (61%) are all sounds perceived as unpleasant.

The noise generated by the class itself appears as the most annoying for the teenagers. Nuisances in the corridors and the canteen come next.

However, if usually few students declare straight away that they are annoyed by noise, a quarter of them do not have any place to relax within their high school.

... generates disturbances

The survey also shows that all the class activities are rather disturbed by noise. Communications are, according to most students, the first to be affected: teachers have to speak louder (69%) and noise disturbs exchanges (56%).

Cognitive tasks, such as memorising, understanding texts, doing exercises and tests, are also often or very often made more difficult.

As collateral damage, noise often or very often causes difficulties to concentrate

(57%) and a need to talk louder (49%) for many students. It also entails often or very often tiredness (39%), headaches (34%), stress (29%) and a certain irritability (26%).

Youth have a strong demand for high sound levels

The survey confirms it: most students are exposed to significant sound levels that can have effects on their hearing in the long term. Among them, 85% listen to their MP3 player every day or several times a week and 79% do it more than an hour a day (including 27% more than 4 hours).

In addition, 9% of the students fall asleep

every night while listening to their MP3 player and 28% at least once a week.

To justify the high sound levels, the teenagers explain that they want to "submerge themselves in the music" (66%), "let off steam" (61%) or "be in a bubble" (76%).

Most students (80%) even keep an earbud in while chatting with their friends.

Risks only happen to other people!

When they are interrogated on the health risks related to noise exposure, 61% mention a high or very high risk for French people in general. But when it comes to assessing their own risk, only 32% consider this risk to be high or very high.

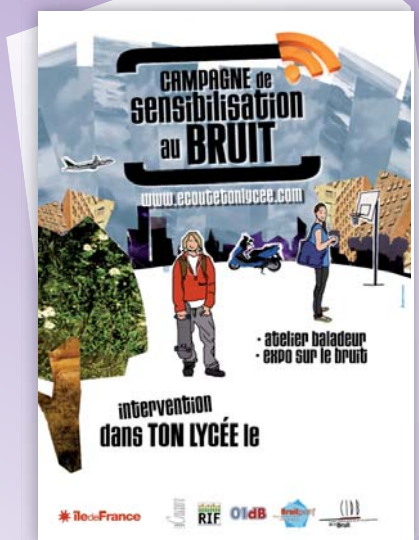
And yet these teenagers seem to have a certain knowledge on hearing risks. 80% of them know that the hearing loss is irreversible and most of them are aware that the duration of exposure can affect their hearing (69%). However, 62% think they can still get their hearing abilities back a few hours after a concert.

Few, only 35%, take precautions, by reducing the sound level (47%), by going away

from the speakers (37%) or by wearing earplugs (16%).

And yet 37% of the students have already heard buzzing or whistling after an exposure to amplified music. A big majority of teenagers waited for it to go away (94%) without going to a doctor or an ENT specialist.

As a conclusion, this survey confirms that high school students engage in risky behaviour, especially by cumulating high sound levels and extended exposure to amplified music. If they do not ignore the risks, it seems that they consider them to be higher for other people than for themselves.



These elements militate in favour of extending and intensifying this type of awareness action.

Get all the results of the pilot campaign on www.bruitparif.fr

Interview with Jean-François Bel, "Environment" Vice-President in Yvelines and Mayor of Montesson



Jean-François Bel

How did you make your noise map and what was the role of Bruitparif?

We opted to all work together, with the precious advice and the technical assistance of Bruitparif: the 85 towns in the Yvelines department that are part of the Paris agglomeration made a group order to launch the work on maps. This group was managed by the town of Montesson, of which I am the Mayor.

The advantages provided by this operating mode were undeniable on the technical as well as on the financial level. Only 18 months were needed to make these maps and publish them (last September) and in the end they only cost a little less than 20 euro cents by inhabitant.

What are your expectations for the future?

I think that noise assessment is a complex phenomenon that requires an important technical competence. It seems difficult to me that every town, even every agglomeration community, hires a noise specialist. It is necessary to share means and competences within a regional organisation like Bruitparif.

Moreover, in two years already, we will have to work on updating the noise maps, as required by the European Noise Directive. Therefore, I wish the State could study as of now the possibility to simplify this system for the Paris agglomeration by entrusting the noise maps on this territory to a single local authority. I personally consider that the most relevant authority for that would be the Ile-de-France Region.

Q&A

Why aggregate the strategic noise maps at the regional scale?

The transposition into French law of the 2002/49/EC Directive regarding the management and the assessment of noise in the environment entrusted the generation of noise maps and the drawing up of action plans to the towns and the agglomeration communities in charge of noise in the Paris agglomeration (that is to say, more than 240 local authorities).

Today, in most cases, the work on noise maps is finished or about to be. It is now time to aggregate the maps made by these different entities.

What are the objectives of this aggregation of the strategic noise maps?

The aggregation of the noise maps will provide an overall assessment of exposed populations and will contribute to transversal studies at the regional level.

Among other things, it will be possible to assess multi-exposure situations to several noise sources or to cross noise data with air quality data in order to determine co-exposure situations to air pollution and noise nuisances... All the information then highlighted will help prioritise stakes on objective bases.

The Observatory will then be able to establish a diagnosis shared with all the entities (local authorities, infrastructure managers, State services, associations). They will be able to concentrate and share efforts to fight with even more efficiency against noise nuisances by intervening, preferably, where the most people are exposed to significant levels of pollutions in Ile-de-France.

This first regional diagnosis will also be useful as a repository for the strategic deployment of the noise monitoring network. This project, led by Bruitparif, provides Ile-de-France inhabitants with data to characterise noise in Ile-de-France objectively and to follow its evolutions.

How to make this regional map?

The success of this aggregation work on a regional reference map requires the collaboration of all the entities involved in the implementation of the directive. The local authorities especially need to transmit to the observatory the information produced on their territory in the relevant format.

Bruitparif will then ensure the compilation of the information within a GIS (Geographic Information System), just like a jigsaw puzzle.

In return, the local authorities will get aggregated indicators in order to better locate the noise stakes on their territory in regard to the regional repository.

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A review of the sound management of Techno Parade 2009

For its third year of collaboration with Technopol, the association organising Techno Parade, Bruitparif had suggested to focus its action on the awareness of the participants and the professionals about noise and hearing risks.

Among the means set up for the occasion, 4 measurement stations connected with displays that could be seen by everybody were deployed along the way. Consequently, everybody was able to know the sound level in real time when the floats passed by, as well as the corresponding prevention messages.

The participants of the parade were very interested in this system and were able to understand what sound volume represents in a concrete way. As for the DJs, they were very careful not to expose the participants to levels that could induce hearing risks.

Generally, the volumes were notably reduced in comparison with the previous edition. On the 19 floats engaged in the event, only three exceeded the threshold of 105 dB(A).

This innovative system should soon have new applications within campaigns combining measurements and awareness.

In parallel, 40,000 earplug pairs were distributed by Technopol volunteers to the audience, that proved to be much more aware of the risks this year.

News

of the RUMEUR network

A solution to manage the acoustic impact of big musical events

In partnership with the Stadium of France Consortium, and to answer the complaints of the neighbourhood during major musical events, Bruitparif deployed on July 4th a new system for the organisers to better manage the acoustic impact of the Unighted party in real time. Here is the system set up for the occasion.



As the measurements recorded during the 2008 event revealed significant sound emergencies, between 13 and 15 dB(A) and around 30 dB for low frequencies, the organisers decided to take the matter in hand. For the 2009 edition, in consultation with the local residents, several engagements were taken:

- reduce the sound level by 7 dB(A), including for low frequencies, in comparison with the 2008 event;
- set up a limiter, specific to low frequencies, on the output of the mixing console;
- decrease the height of the sound system by 1 metre.

Within its mission of public interest to monitor noise in Ile-de-France, Bruitparif initiated the necessary steps to set up two stations in order to document the sound impact on the accommodations at the north and the east of the stadium.

Data follow-up in real time

Connected to the Bruitparif servers via a 3G router, the two stations were able to send the collected measurement data in real time to display them on a consultation interface created for the event. This tool was especially aimed at the sound managers to let them monitor the levels at any time and adjust the volume accordingly.

Very positive, the operation entailed a significant decrease in the levels in comparison with the previous edition. The objective was therefore met, even though a slight excess still remained on one of the two stations. As for the local residents who had access to the viewing interface open to the public, they welcomed this approach. In the future, two monitoring stations will be made permanent around the Stadium of France.



Focus The interest of measurements as a complement to noise maps

Marie Larnaudie,
Environment manager
Plaine Commune Agglomeration community

You have been one of the first entities to sign a partnership with Bruitparif to deploy measurement stations on your territory. What is your strategy?

ML: The installation of noise measurement stations on our territory is part of a partnership between the Seine-Saint-Denis Department, Plaine Commune and Bruitparif. Stations have already been installed on 3 sites to measure the evolution of exposure and emission levels in areas undergoing major changes:

- by the former RN1 road in Pierrefitte-sur-Seine in order to show the influence of the introduction of a new tramway on tyres for Saint-Denis/Garges/Sarcelles;
- by the Tangentielle Nord in Villetaneuse;

- on the roof of a building in Pierrefitte-sur-Seine in order to quantify the exposure to air-plane overflights coming from or going to Le Bourget and Roissy airports.

What do you expect from these stations?

ML: We expect to follow the results regularly thanks to the analysis and the interpretation of the many measured data. There are indeed major stakes around a permanent noise measuring network. The Seine-Saint-Denis Department and CIDB will complete this quantitative aspect with a qualitative study (a survey of the inhabitants) on the noise exposure of the people living in close proximity to the former RN1 road and the future tramway.



Café terraces: Bruitparif tests a noise awareness system

Since the ban on smoking in public places and the multiplication of terraces, the tension has been rising between café owners and their neighbours on the topic of noise nuisances. Sent outside to smoke their cigarettes, the customers generate more noise, without necessarily being aware of it. With this in mind, Bruitparif decided to test a measurement and awareness system so that the customers could realise the potential annoyance and self-regulate. How does this device work? Here is the explanation.

Installed since September on the terrace of a Parisian pub, well in sight, this system is used to inform the customers on the sound level they generate when they chat and laugh together and on the consequences that it can have on the neighbourhood quietness.

Very easy to use, the device gives a visible luminous warning in real time, as soon as the noise level exceeds a preset limit. Basically, in a similar way to traffic lights, the warning lights go from green to yellow and from yellow to red.

The customers easily understand that they

are making a little too much noise and that it can disturb the neighbourhood. They then speak lower.

To adapt to any context, the thresholds of the system can be configured. In this case, the teams suggested that the light turns yellow at 75 dB(A) and red above 80 dB(A).

The cocktail effect, a level 100 times as high as a normal conversation

The first thing to know is that a discussion between two people in a quiet place revolves around 60 dB(A). But as soon as several people are gathered, they end up - usually unconsciously - raising the sound of their voices for the discussion to stay intelligible and to cover the general hubbub.

It is not rare for the sound level to reach 80, even 85 dB(A), due to the well-known phenomenon named "cocktail effect," which represents a sound level 100 times as high as a normal conversation.



When the cocktail effect phenomenon starts or the customers are laughing or shouting, the sound level can momentarily exceed 80 dB(A) on the terrace, that is to say 60 dB(A) 20 metres away (noise decreases by 6 dB(A) as distance doubles), which can keep the neighbours, especially the youngest ones, from sleeping or falling asleep.

The WHO indeed recommends for a quality sleep that the noise level outside bedrooms when the window is open does not exceed 60 dB(A) instantaneously and 40 dB(A) in terms of night yearly average.

Collecting and analysing data to make the dialogue easier

Beyond the instantaneous awareness, the system can record the measured data (but not the conversations, of course) so that they can be analysed by the Bruitparif teams. Café owners, neighbours and local authorities could then get objective data to characterise nuisances.

The owners could for instance assess when the thresholds are exceeded, know the moments when the discussions get louder and set objectives. They could also quantify the impact of the system towards the customers, exchange with them with concrete bases and validate the efficiency of this solution.

Let's hope that this system makes the dialogue easier and more serene and reconciles the interests of everybody: those of the café owners, whose objective is to bring life to the area, and those of the neighbours who desire quietness when they are at home.

FOCUS

A system that can adapt to various contexts

The device measures noise on a scale going from 40 dB(A) to 115 dB(A). 40 dB(A) corresponds to quiet atmospheres, such as can be found in libraries for example. 115 dB(A) corresponds to a very high level, close to the threshold of pain. This is, for instance, the level recorded next to a racing track when a Formula 1 passes by.

The device can then be used in various contexts: musical events, education or health buildings... All there is to do is configure the thresholds according to the set objectives. So, in a classroom, the level to turn yellow could be set on 65 dB(A) for example, to guarantee a good quality of learning for the students and comfort of speech for the teacher. In a nightclub, the level could be set around 105 dB(A), which corresponds to the regulatory threshold.



27th International Environmental Film Festival: the movie "Noise" awarded

Bruitparif is glad to see noise pollution considered as a major environmental issue.

David Owen (Tim Robbins), a brilliant New York lawyer, cannot bear the unremitting din of the city any more, especially the car alarms that set off inopportunely, both by day and by night.

Determined to end this noise "terrorism," he dresses up as a masked hero and signs his misdeeds under the name of the "Rectifier."

But his activities as a righter of wrongs threaten to destroy his family and his job and are bringing down the wrath of the City Mayor (William Hurt) upon him.

Last November 21st, the room was full for the advanced showing of the movie in official competition in the Fiction category.

After the debate, Bruitparif and the Regional Health Observatory exchanged with the audience about urban noise nuisances. The topic generated many comments and questions from a won-over audience.

"If the problem of car alarms setting off inopportunely is not as present in Europe," explains Fanny Mietlicki, Director of Bruitparif, *"the movie highlights the aggression that can be caused by the noise emergencies (horns, especially noisy two-wheelers...) that add to the already tiring din of the city. Everyone must become aware that they are both creator and receptor of noise, which is brilliantly suggested in this movie,"* Fanny Mietlicki concludes.

Tim Robbins



Decoding

One in five Europeans exposed to sound levels at night that could significantly damage health

The WHO Regional Office for Europe has just published a study entitled "Night noise guidelines for Europe" that confirms the potential health damage caused by high sound levels at night and suggests a new threshold to limit the risks.

In complement to the 2002/49/EC European Noise Directive, this new book by the WHO provides public authorities with objective elements to take the measure of the problem and decide on the implementation of an action plan.

In particular, the WHO recommends to limit the annual average night exposure at 40 dB(A), which corresponds to the sound from a quiet street in a residential area. Beyond this level, the WHO specifies, sleepers can suffer from sleep disturbance and insomnia. Indeed, ears, brains and bodies continue to react to sounds during the different phases of sleep.

"Just like air pollution and toxic chemicals, noise is an environmental hazard to health. While almost everyone is exposed to too much noise, it has traditionally been dismissed as an inevitable fact of urban life and has not been targeted and controlled as much as other risks," concludes Dr Rokho Kim of the WHO Regional Office for Europe, who managed the project to draw up the guidelines.

The WHO recommends to limit the average night exposure at 40 dB(A)

The study also specifies that long-term average exposure to levels above 55 dB(A), similar to the noise from a busy street, can trigger elevated blood pressure and even heart attacks. One in five Europeans is regularly exposed to such noise levels.

"We hope that the new guidelines will prompt governments and local authorities to invest effort and money in protecting health from this growing hazard, particularly in cities."

Recommendations

"How to fight against noise? To each noise its solution"

This is the title of the Guide written by the town of Rueil-Malmaison and the Chamber of Commerce and Industry of Paris Hauts-de-Seine. Decidedly practical and concrete, this guidebook is aimed at helping shop owners and artisans to prevent or correct noise nuisances related to their activity.



"To each noise its solution" is available online on www.mairie-rueil-malmaison.fr and www.cci92.fr

"Guide of the technical aids for hearing-impaired and deaf people" by Jérôme Goust

For its 3rd edition, the Guide gets a major overhaul. Entirely revised and completed, it becomes THE guide of the compensations for hearing losses with: a method to analyse communication situations, all the technical aids and their uses, self re-education exercises and a true guide recapitulating the financing channels available to complete the refunds from Social Security.



If you would like to order it, go to <http://www.l-ouie.fr/>

"Noise in Ile-de-France, perceptions, tools and assessment methods – Proceedings of the Conference"

Relations between noise and health, detailed presentation of the missions of Bruitparif and of the monitoring network RUMEUR, interest of measurements and surveys as a complement to noise maps, experience sharing...



Discover the Proceedings of the Conference of June 23rd, 2009, a document available for download on www.bruitparif.fr in the category "Nos publications"

Agenda

> From January 12th to 23rd, 2010

For the Week of sound, at the initiative of the town of Bourg-la-Reine, Bruitparif is invited to intervene within 6 elementary classes around the awareness of the sound environment and hearing risks. On the agenda: sound physics, how the ear works, health risks, based on simple experiments accessible to a young audience.

> February 12th, 2010

The City of Paris, CIBD and Bruitparif are organising a **reflection day on "quiet areas"** in Paris on February 12th, 2010. This conference is aimed at the relevant public authorities (regions, departments, agglomeration communities, airport and land transportation infrastructure managers, State services, town planning agencies, etc.), as well as associations and neighbourhood council representatives, contractors and operational consultancies. On this occasion, Bruitparif will animate a workshop based on the experimentation made on 3 sites in Paris.

