

## *Summary Report*

<b>Section 1: PROJECT IDENTIFICATION</b> Information to be provided for project identification		<b>NOT CONFIDENTIAL</b>
<b>Title of the project</b> Noise Pollution Health Effects Reduction		
<b>Acronym of the project</b> NOPHER		
<b>Type of contract</b> Concerted Action		<b>Total project cost</b> €399.991 €
<b>Contract number</b>  QLK4-CT-1999-01287	<b>Duration</b>  36 Months	<b>EU contribution</b>  €399.991
<b>Commencement date</b>  1 February 2000		<b>Period covered by the progress report</b>  1 February 2000 – 31 March 2003
<b><u>PROJECT COORDINATOR</u></b>		
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<b>Key words</b>  Noise Pollution, Hearing Loss, Environmental Health.		
<b>World wide web address</b>  <a href="http://www.ucl.ac.uk/noiseandhealth">www.ucl.ac.uk/noiseandhealth</a>		
<b>List of participants</b>  See List Below		

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## **FINAL PROGRESS REPORT**

### **Objectives**

- 1.Improve the effectiveness and quality of research on noise pollution and its impact on health through European collaboration.
- 2.Seek to develop Europe-wide consensus on the strengths of causal relationships between environmental noise and health effects and seek improvement of methodological standards.
- 3.Establish unified protocols and initiate field studies across East/West Europe to determine extent of auditory damage from exposure to industrial chemicals with and without noise.
- 4.Seek to develop a Europe-wide epidemiological evaluation of leisure noise induced tinnitus.
- 5.Set up an international register of children affected by noisy toys and a network of noise experts.
- 6.Seek to develop a multi-centre trial to determine the value of otoacoustic emissions as an early indicator of noise damage.

### **Description of work**

- Through workshops and working parties the strengths of the causal relationships between road, rail, and aircraft noise and various health effects such as annoyance, sleep disturbance, interference with speech communication, performance and learning in children, cardiovascular, endocrine and immunological changes will be established.
- The methodological issues of noise exposure and health effects assessment will be evaluated to improve the quality of research and consequently the basis of environmental health policy decisions.
- Workgroup will establish protocols to evaluate auditory damage due to ototoxic chemicals alone and in combination with noise from diverse industries in East /West Europe offering different exposure levels.
- A multi-centre epidemiological study of leisure noise induced tinnitus in young people will be planned and executed by an all European workgroup pooling data for more robust measures of outcome. Noisy toys have led to acoustic trauma in children but there is a lack of sufficient evidence, therefore it is planned to set up an international register of case-studies to provide evidence of the hazards.
- This project will bring together experts to consider the feasibility of trials of novel pharmacological and other means of protecting against noise trauma and development of new strategies.

Early indication of noise induced hearing loss and identification of individuals at risk would greatly reduce the incidence, therefore a multi-centre trial of otoacoustic emissions test will be planned and conducted to determine its value as a predictor of hearing damage.

## Results and deliverables

### Proposed Milestones and Deliverables

<b>Time (Months)</b>	<b>Milestones/Deliverables</b>
0-6	Workshop (W1): Protocols for Noise / Chemical (WP3) Workshop (W2): Environmental Health Effects (WP1) P1: Workshop Proceedings NL1: Newsletter
6-12	Conference (AC1): Noise Pollution and Health: Current State (WP1-6) P2: Conference Proceedings NL2: Newsletter Workshop (W3): Methodological issues (WP4)
12-18	Workshop (W4): Individual Sensitivity (WP5) P3: Workshop Proceedings NL3: Newsletter
18-24	Conference (AC2): Health Effects of Environmental Noise (WP1, WP4, WP5)
24-36	P3: Conference Proceedings NL4: Newsletter Workshops(W5): Pharmacological Protection (WP2) P4: Workshop Proceedings NL5: Newsletter Conference (AC3): Protection from Noise (WP3, WP6) P5: Conference Proceedings
<b>Annual Conference (AC); Proceedings Publication (P); Newsletter (NL); Workshop (W</b>	

## Results Achieved

- 0-6 (W1): Noise/chemicals Effects; (W2): Environmental Health Effects, CP1, CP2, NL1  
6-12 (C1): Noise pollution and Health - NOPHER 2000, CP3, NL2, S1  
12-18 (C2): INTERNATIONAL SYMPOSIUM on Noise pollution and Health  
- (WP1, WP2, WP4, WP5)  
Sessions on: Noise policy and mapping; Quantification and Characterisation of noise; Physiological effects; Annoyance reactions; Sleep disturbance; Psychological effects; Noise effects in children; Industrial and Urban noise environments  
- Proceedings available  
(W3): INTERNATIONAL WORKSHOP: Current evidence for specific health outcomes in relation to particular noise sources (Road, Rail, Aircraft) – (WP1)  
(W4): INTERNATIONAL WORKSHOP: Noise/chemicals Effects – (WP3)  
NL3: NOPHER Newsletter: Journal of Noise and Health Volume 3 issue 11  
NL 4: NOPHER Newsletter: Journal of Noise and Health Volume 3 issue 12
- 18-24 (W5): INTERNATIONAL WORKSHOP: Noise/chemicals Effects – (WP3)  
(W6): INTERNATIONAL WORKSHOP: Noise/chemicals Effects – (WP3)  
NL5: NOPHER Newsletter: Journal of Noise and Health Volume 4 issues 13  
NL6: NOPHER Newsletter: Journal of Noise and Health Volume 4 issues 14
- 24-30 (W7): Environmental Noise Solutions, Cambridge - (WP1)  
- Proceedings available  
(W8): Individual Susceptibility to Noise Damage, Novartis Foundation, London - (WP5)  
NL7: NOPHER Newsletter: Journal of Noise and Health Volume 4 issue 15  
NL 8: NOPHER Newsletter: Journal of Noise and Health Volume 4 issue 16
- 30-36 (W9): Noise Pollution: Health Effects on Children, Berlin - (WP4)  
(C3): NOPHER 2002 -Nordic Noise II - (WP1-6)  
Session on: Noise Induced Tinnitus; Epidemiology of Noise Induced Hearing Loss; Hearing loss without audiometric evidence; Noise and Chemicals; Stress and the Auditory System; Hair cell regeneration; Prevention of Hearing Loss; Genetical aspects of Hearing Loss; New Measurements of Hearing; Impulse Noise and Noise Measurements; Round Table Discussion on Experimental Models in NIHL
- (W10): NOPHER Co-ordinators Meeting – (WP1-6)  
(W11): WHO/NOPHER Meeting: Combined Environmental Pollutants and Health – (WP3)  
NL9: NOPHER Newsletter: Journal of Noise and Health Volume 5 issues 17  
NL10: NOPHER Newsletter: Journal of Noise and Health Volume 5 issues 18

**C=Conference; W=Workshop; NL=Newsletter**

## Meetings

### YEAR 1

- (1) NOPHER 2000: INTERNATIONAL CONFERENCE: Noise Induced Hearing Loss. 7-9 July 2000, Cambridge, UK
  1. INTERNATIONAL WORKSHOP: Development of an Environmental Noise Health Information System - 7<sup>th</sup> July 2000, Cambridge, UK
- (2) INTERNATIONAL WORKSHOP: Effects of Combined Chemicals and Noise Exposures on Hearing and Balance - 9<sup>th</sup> July 2000, Cambridge, UK
- (3) Mini-symposium 45. Interaction Effects of noise and industrial chemicals on hearing. Organised by Prasher, D. and Johnson, A-C. 26<sup>th</sup> International Congress on Occupational Health (ICOH). 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore.

### YEAR 2

- (4) NOPHER 2001: INTERNATIONAL CONFERENCE: Noise Pollution and Health. 6-8 April 2001, Cambridge, UK
  2. INTERNATIONAL WORKSHOP: Current evidence for specific health outcomes in relation to particular noise sources (Road, Rail, Aircraft). 6 April 2001, Cambridge, UK
- (5) INTERNATIONAL WORKSHOP: Noise/chemicals Effects. 27-28 April 2001, Nancy, France
- (6) INTERNATIONAL WORKSHOP: Noise/chemicals Effects. 20-21 Sept 2001, Bordeaux, France
- (7) INTERNATIONAL WORKSHOP: Noise/chemicals Effects. 24 Oct 2001, Brussels, Belgium

### YEAR 3

- (8) INTERNATIONAL WORKSHOP: **Environmental Noise Solutions**, 10 July 2002, Cambridge, UK
- (9) INTERNATIONAL WORKSHOP: **Individual Susceptibility to Noise Damage**, 19-20 July 2002, Novartis Foundation, London, UK
- (10) INTERNATIONAL WORKSHOP: **Noise Pollution: Health Effects on Children**, 5-7 October 2002, Berlin, Germany
- (11) INTERNATIONAL CONFERENCE: **NOPHER 2002-Nordic Noise II**, 24-27 Oct 2002, Stockholm, Sweden
- (12) INTERNATIONAL WORKSHOP: **NOPHER Co-ordinators Meeting**, 18 January 2003, Novartis Foundation, London, UK



## Publications

### YEAR 1

- (1) **Prasher, D.** (2000) A European Concerted Action on Noise Pollution Health Effects Reduction - NOPHER. *Noise and Health*, 7; 1-3.
- (2) **Ising, H and Prasher, D.** (2000). Noise as a stressor and its impact on health. *Noise and Health*, 7; 5-7.
- (3) **Ising, H and Prasher, D.**(eds.) Environmental Noise, Stress and Cardiovascular Risk: Special Issue of Noise and Health. 2000, Vol. 7
- (4) **Babisch, W., Ising, H.,** Gallacher, J.E.J. 2000 Association between noise annoyance and incidence of ischaemic heart disease in the Caerphilly and Speedwell studies. In: D. CASSEREAU (ed.) InterNoise 2000. Proceedings of the 29th International Congress on Noise Control Engineering. Société Française d'Acoustique, Institut National de recherche sur les Transports et leur Sécurité, Nice, 2065-2070.
- (5) **Ising, H., Babisch, W.** 2000 Schwerhörigkeit durch Freizeitlärm. In: BUNDESÄRZTEKAMMER (ed.) Fortschritt und Fortbildung in der Medizin, Band 24 (2000/2001). Deutscher Ärzte-Verlag, Köln, 31-39, ISSN 0170-3331.
- (6) Stansfeld SA, Haines MM, Burr M, **Berry B, Lercher P.** A review of environmental noise and mental health. *Noise & Health* 2000; 8, 55-58.
- (7) Meis M, Evans GW, **Hygge S, Lercher P,** Bullinger M, Schick A. Chronic and acute effects of transportation noise on task performance of school children. Proc. Internoise 2000 (Nice), 2000, CD-ROM.
- (8) **Ann Christin Johnson; Thais Morata;** Per R Nylen; Eva B. Svensson Hearing loss in workers exposed to styrene and/or noise. Description of audiologic test battery and preliminary results. Abstracts of the 23st Midwinter meeting of the Association for Research in Otolaryngology, St. Petersburg, Florida, USA, February, 2000
- (9) **Ilmari Pyykkö, Ann-Christin Johnson,** Esko Toppila, **Jukka Starck** Noise Susceptibility and Ageing, Abstracts of the First European Conference: Noise Pollution Health Reduction, Cambridge, UK, July, 2000
- (10) **Ilmari Pyykkö,** Jing Zou, **Ann-Christin Johnson,** Petri Erikson, Poul Bretlau, A difference between antioxidants and neurotrophins in protecting cochlea from vibration and noise trauma? Abstracts of the First European Conference: Noise Pollution Health Effects Reduction, Cambridge, UK, July, 2000
- (11) **H. Ising und C. Maschke** (Hrsg.) (2000): Beeinträchtigung der Gesundheit durch Verkehrslärm – ein deutscher Beitrag. Im Auftrag des Bundesministeriums für Gesundheit, [http://apug:apug@fc.uminfoc.de/](http://apug:apug@fc.uminfoc.de)
- (12) **Toppila, E., Pyykko, I, Starck, J.,** Kaksonen, R., Ishizaki, H. (2000). Individual risk factors in the development of noise induced hearing loss. *Noise and Health*, Volume 3, 8; 59-71.
- (13) **Prasher, D.** (2000) Noise Pollution Health Effects Reduction (NOPHER): A European Commission Concerted Action Workplan. *Noise and Health*, 8; 79-85.

- (14) **Starck, J., Toppila, E., Pykko, I.** Database expert program for individual hearing conservation. Session FP 77: Noise and Vibration. 26<sup>th</sup> International Congress on Occupational Health. 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore. Abstract Book, p436.
- (15) **Starck, J., Toppila, E., Pykko, I.** Solvents, Noise and Other Factors in the genesis of hearing loss. Mini-symposium 45. Interaction Effects of noise and industrial chemicals on hearing. 6<sup>th</sup> International Congress on Occupational Health. 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore. Abstract Book, p143.
- (16) **Prasher, D. and Morata, T.** Noise and industrial chemicals: Testing for their effects on the auditory system. Mini-symposium 45. Interaction Effects of noise and industrial chemicals on hearing. 6<sup>th</sup> International Congress on Occupational Health. 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore. Abstract Book, p143.
- (17) **Sulkowski, WJ., Prasher, D.,** Kostrzewski, P., Kowalska, S., Guzek, W. Ototoxic effects of occupational exposure to a mixture of organic solvents: A field study. Mini-symposium 45. Interaction Effects of noise and industrial chemicals on hearing. 6<sup>th</sup> International Congress on Occupational Health. 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore. Abstract Book, p143.
- (18) **Prasher, D.** (2000) A European Commission Concerted Action on Noise Pollution Health Effects Reduction (NOPHER). Mini-symposium 45. Interaction Effects of noise and industrial chemicals on hearing. 6<sup>th</sup> International Congress on Occupational Health. 27<sup>th</sup> August - 1<sup>st</sup> September 2000. Singapore. Abstract Book, p144.
- (19) NOPHER 2000: INTERNATIONAL CONFERENCE: Noise Induced Hearing Loss. Abstracts Book. [www.ucl.ac.uk/noiseandhealth](http://www.ucl.ac.uk/noiseandhealth).
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