



3rd European Conference
on Protective Clothing (ECPC)
and NOKOBETEF 8

Protective clothing

– Towards Balanced Protection

Program

POLAND GDYNIA 10-12 May 2006



European Society of Protective Clothing

Ministry
of Economy



European Safety Federation



Social Insurance Institution



10 May 2006 WEDNESDAY

- 8.00 – 9.00** **Registration**
- 9.00 – 9.45** **Opening and welcome**
D. Koradecka, *Director of Central Institute for Labour Protection – National Research Institute, POLAND*
B. Borys-Szopa, *Chief Labour Inspector, National Labour Inspectorate, POLAND*
M. Kałużyńska, *Director of the Economic Regulation Department, Ministry of Economy, POLAND*
H. Vanhoutte, *Secretary General of the European Safety Federation, BELGIUM*
- 9.45– 10.00** **Introductory lecture:**
Protective clothing – nowadays and vision
H. Mäkinen, *chair of the European Society of Protective Clothing, Finnish Institute of Occupational Health, FINLAND*
- 10.00 – 11.00** **Session 1 A**
New aspects in methodology of testing protective clothing and gloves
- Chairperson:** G. Bartkowiak, *CIOP-PIB, POLAND*
Co-chair: N. Sorensen, *BTTG Fire Technology Services, UK*
- 10.00** **Development of a test method against hot alkaline chemical splashes**
H. Mäkinen, K. Nieminen, S. Mäki, S. Isopahkala – *FIOH, FINLAND*
- 10.15** **Protection from steam at high pressures: development of a test device and protocol**
R. Sati, E.M. Crown, M.Y. Ackerman, J.A. Gonzalez, J. D. Dale – *University of Alberta, CANADA*
- 10.30** **Alternative methods of determination of water vapour resistance of fabrics by means of a skin model**
L. Hes – *Technical University of Liberec, CZECH REPUBLIC*
- 10.45** **Nighttime visibility assessment of garment designs**
D. Loosen – *3M, GERMANY*
- 11.00 – 11.30** **Coffee break**



11.30 - 12.45 **Session 1 B**
New aspects in methodology of testing protective clothing and gloves

Chairperson: *A. Mayer, INRS, FRANCE*

Co-chair: *J. Fan, Hong-Kong Politechnic University, HONG-KONG*

11.30 **The effect of the glove material stretch deformation on cut resistance**

J. Lara – IRSST, CANADA

T.B.N. Vu, T. Vu-Khanh – Université de Sherbroke, CANADA

11.45 **Evaluation of the flexibility of protective gloves**

L. Harrabi, P. I. Dolez, T. Vu-Khanh – ETS, CANADA

J. Lara – IRSST, CANADA

12.00 **New developments in cut resistance - an update on standards and products**

R. Zumloh, Ch. Hahn – Teijin Twaron GmbH, GERMANY

12.15 **Seam characterization in antistatic protection garments**

P. Lemaire – Centexbel, BELGIUM

12.30 **Discussion**

12.45 - 13.45 **Lunch break**

13.45 - 15.30 **Session 2**
Standardization in the field of protective clothing and gloves

Chairperson: *P. Heffels, BG BAU-Arbeitsschutzzentrum Haan, GERMANY*

Co-chair: *I. Frydrych, Technical University of Łódź, POLAND*

13.45 **The need of continuous improvement of the EN standards on PPE
and of the information given to consumers**

A. Mayer – INRS, FRANCE

14.00 **PPE programme as a part of safety management**

E. Korhonen – FIOH, FINLAND

14.15 **Protective clothing against rain or low temperatures - overview of European standards**

P. Heffels – BG BAU-Arbeitsschutzzentrum Haan, GERMANY

- 14.30** **Protective clothing against the thermal risks of an electrical arc – requirements for development, testing and evaluation**
H. Beier – *STFI, GERMANY*
- 14.45** **Approaches for incorporating CBRN requirements as part of protective ensemble standards for emergency responders**
J. O. Stull – *International Personnel Protection, Inc., USA*
W. E. Haskell, A. M. Shepherd - *NIOSH, USA*
- 15.00** **A review of European methods of estimating the covers protecting against the blunt injury**
G. Redlich – *ITWW Moratex, POLAND*
- 15.15** **Discussion**
- 15.30 - 16.00** **Coffee break**
- 16.00 - 17.45** **Session 3**
Research in development of new materials and products
- Chairperson:** *H. Mäkinen, FIOH, FINLAND*
Co-chair: *J. Lara, IRSST, CANADA*
- 16.00** **Flame resistant multifunctional fabrics against electric arcs**
U. Pitschner – Schümer GmbH & Co., GERMANY
- 16.15** **Development of a versatile insulating jacket using NiTi alloy two-way SMA conical spring**
E. Kim, J. Yeo, S. Yoo – *Functional Textile System Research Lab, KOREA*
- 16.30** **Comfortable protection against molten iron sparks and splashes**
Y. Bader, H. Eichinger – *DuPont Personal Protection, SWITZERLAND*
- 16.45** **Knitted textile materials protecting against static electricity**
A. Pinar, E. MatyjasZgondek – *TRICOTEXTIL, POLAND*
- 17.00** **New cooling undergarment for protective garment systems**
B. Pause – *Textile Testing & Innovation, USA*
- 17.15** **Optimizing the performance of phase change materials in personal protective clothing systems**
R. E. Reinertsen, H. Fćrevik, K. Holbř, J. Reitan, A. Rřyset – *SINTEF Health Research, Norway*
- 17.30** **Discussion**



11 May 2006 THURSDAY

9.00 -11.00 **Session 4**

Protective clothing for fire-fighters

Chairperson: **J. O. Stull**, *International Personnel Protection, Inc., USA*

Co-chair: **R. Reinertsen**, *SINTEF Health Research, Norway*

9.00 **Thermal stress on firefighters in extreme heat exposure**

I. Holmér, K. Kuklane, Ch. Gao – *Lund University, SWEDEN*

9.15 **Thermal and mechanical performance of firefighters' protective clothing after heat exposure**

R. Rossi, W. Bolli, R. Stämpfli – *EMPA, SWITZERLAND*

9.30 **A new facility for testing the fire protective performance of ensembles of PPE**

N. Sorensen, P. Eaton, M. Healey – *BTTG Fire Technology Services, UK*

9.45 **Thermal strain in fire fighters while wearing task-fitted protective clothing vs. EN 469 protective clothing during a prolonged job-related rescue drill**

R. Ilmarinen, H. Mäkinen, H. Lindholm A. Punakallio – *FIOH, FINLAND*

H. Kervinen – *Länsi-Uudenmaa Rescue Service Region, FINLAND*

10.00 **Performance and limitations of aluminised PPE**

S. Assmann – *ALWIT GmbH, GERMANY*

10.15 **Determination of the protective performance of the worn PC for the fire fighters**

O. Dvorak – *Fire Technical Institute, CZECH REPUBLIC*

10.30 **Analysis of the distribution of sweat in firefighters' protective clothing layers**

C. Keiser, C. Becker, R. Rossi, L. Schlapbach - *EMPA, SWITZERLAND*

10.45 **Discussion**

11.00 - 11.30 **Coffee break**

11.30 - 12.45 **Session 5**
Protection against chemical hazards

Chairperson: **H. Eichinger**, *DuPont, SWITZERLAND*
Co-chair: **M. Rodot**, *Mapa-Spontex Professionnel, FRANCE*

11.30 **Study on the permeation resistance of gloves against hairdressing chemicals**
P. Paszkiewicz – BGIA, GERMANY

11.45 **A perspective on realistic material chemical performance requirements: the need to redefine how industry chooses chemical protective suit materials**
J. O. Stull – International Personnel Protection, Inc., USA

12.00 **Load, risks and the need to use PPE in agricultural enterprises**
T. Hinz – Federal Agricultural Research Centre, GERMANY

12.15 **Protective clothing for pesticide applicators: a comprehensive online system for data management, analysis and dissemination of information**
A. Shaw, G. Vankayala – University of Maryland Eastern Shore, USA

12.30 **Chemical protective gloves from performances to service time prediction**
M. Rodot – Mapa - Spontex Professionnel, FRANCE

12.45 **Discussion**

13.00 - 14.00 **Lunch break**

14.00 - 15.00 **Session 6**
Physiological aspects of wearing protective clothing

Chairperson: **I. Holmer**, *Lund University, SWEDEN*
Co-chair: **L. Hes**, *Technical University of Liberec, CZECH REPUBLIC*

14.00 **A transient thermal model of the human body-clothing-environment system**
X.F. Wan, J. Fan – Hong Kong Polytechnic University, HONG KONG

14.15 **Heat strain in air-permeable protective and semi-permeable protective clothing**
P.A. Reffeltrath, M.G. Brandsma, E.M Van Es, J.A. Kistemaker, M.G.M. Weghorst, H.A.M. Daanen – TNO, THE NETHERLANDS

14.30 **Numerical simulations of heat and moisture transport in thermal protective clothing system under flash fire condition**
G. Song – University of Alberta, CANADA

14.45 **Discussion**