

***TM-21-93***  
***Chemical Exposure and Health***  
***Status of Identification Personnel***

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TECHNICAL MEMORANDUM

Submitted by  
Canadian Police Research Centre

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NOTE: Further information  
about this report can be  
obtained by calling the  
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(613) 998-6343

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## SUMMARY

Police officers involved in identification procedures are occupationally exposed to many and diverse agents. Previous studies have partially documented the range and type of exposures of these Ident. officers, as well as possible health consequences of these exposures. Concerns raised by these studies of smaller units were sufficient to result in this larger Canada-wide prevalence study.

The totality of evidence from this study supports the conclusion that ident. officers have an increased prevalence of respiratory illness due to some occupational exposure. Unfortunately, the nature of the exposure is such that this study was not able to demonstrate the involvement of any particular powder, agent, or other work exposure, in the etiology of this increase.

It is difficult to make recommendations concerning measures that may be taken to reduce the risk of illness, in view of this lack of evidence about which agent or group of agents may be involved. At the least, the results of this study reinforce the wisdom of using those personal protective measures that are available under field conditions.

## RÉSUMÉ

Les policiers affectés à des fonctions d'identification sont exposés à de nombreux produits au travail. Des études antérieures ont permis de documenter partiellement la gamme de produits auxquels ces policiers sont exposés, la nature de ces produits ainsi que leurs effets possibles sur la santé des travailleurs. Les préoccupations soulevées par ces études de plus petits groupes ont justifié la réalisation de cette étude de prévalence de plus grande envergure à l'échelle du Canada.

Toutes les preuves recueillies dans le cadre de cette étude permettent de conclure que les agents d'identification sont plus susceptibles d'éprouver des troubles respiratoires en raison de leur exposition professionnelle à divers produits. Malheureusement, la nature des sources d'exposition est telle que l'étude n'a pas permis d'établir de liens entre des poudres, des agents ou d'autres sources d'exposition particuliers et l'étiologie de l'augmentation des problèmes de santé.

Il est difficile de recommander des mesures à prendre afin de réduire les risques de maladie étant donné qu'on n'a pu démontrer quel agent ou groupe d'agents peuvent être à la source des problèmes. Néanmoins, les résultats de l'étude font ressortir l'importance d'utiliser le matériel de protection approprié mis à la disposition des travailleurs sur le terrain.

Police officers involved in identification procedures are occupationally exposed to many and diverse agents. Previous studies have partially documented the range and type of exposures of these Ident. officers, as well as possible health consequences of these exposures. Concerns raised by these studies of smaller units were sufficient to result in this larger Canada-wide prevalence study.

## **AIMS OF STUDY**

- (i) To compare the 10-year period prevalence of disorders of various organ systems (e.g. respiratory, genitourinary, nervous system, etc.) of ident. and control groups, and to determine if any associations between ident. work and health status were demonstrable.
- (ii) To document the nature and extent of use (and hence possible exposure) for the various fingerprint powders and other agents used in the study population.
- (iii) To determine if any associations between prevalence of disorders and use or extent of use of various classes of agents as well as specific fingerprint powders were apparent.

## **SUBJECTS**

### **Ident. Personnel**

**311** current and former ident. officers participated. Officers from the RCMP, Quebec and Ontario provincial forces, and 15 municipal police forces across Canada were surveyed. All were currently serving members of police forces.

### **Control Personnel**

**205** officers with no experience as ident. officers participated. They were selected from volunteers at the above departments, and were selected from serving members with ages comparable to the ident. members.

## **QUESTIONNAIRE**

All participants were asked to fill out a brief questionnaire documenting age, place of birth, weight, height, and extent of police experience.

Ident. participants were then asked to document their ident experience, and then filled out a usage survey, in which the pattern of use and duration of use was

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reported for each of 78 fingerprint powders known to be in use in Canada during the past decade. As well, they indicated their pattern and duration of use for 9 categories of fingerprint powder classified by appearance (black, grey, etc.) and for use of any of 11 categories of other exposures to individual (iodine, cyanoacrylates, etc.) or groups (hydrochloric and nitric acids, etc.) of agents.

Ident. participants indicated whether most of their use of these agents would be under field or lab conditions, and also estimated the number of cases requiring dusting with fingerprint powders they were involved with in an average month.

A health questionnaire was administered to all participants by one of two physicians with experience in occupational health.

Pattern and duration (using above categories) of exposures to chemicals and other possible hazards for categories of hobby (e.g. model building, painting, furniture restoration) were enumerated. Prior occupational exposure by class of exposure (metal fumes or dusts, pesticides, solvents, etc.) was documented as well. Smoking history was determined for all smokers. Alcohol consumption in terms of drinks per day was also enumerated.

To determine prevalence of various disorders, participants were asked whether they had sought attention from a medical doctor for conditions of various organ systems during the previous ten years. The systems were chosen to correspond to those of ICD-9. To be counted in prevalence estimates, a condition had to be present for greater than a six month period. Only conditions for which medical attention had been sought and obtained were enumerated:

## **CONCLUSIONS**

A previous study of the health of ident. officers by this group demonstrated a statistically significant increase in eye disorders as well as increases in skin and respiratory disorders. These however were not statistically significant. This pilot study involved a smaller number of participants and was not sufficiently powerful to demonstrate plausible increases of statistical significance.

The totality of evidence from this Canada wide study now provides statistical evidence that ident. officers have an increased prevalence of respiratory illness due to some occupational exposure. Unfortunately, the nature of the exposure is such that, in general, this study was not able to demonstrate the involvement of any particular powder, agent, or other work exposure in the etiology of this increase.

This study was undertaken primarily to investigate the relationship between prevalence of illness and use of classes of agents and powders. The bulk of the

information collected pertained to the possibility of an association between use of powders and illness: the chemical nature of the constituents of many powders lends biological plausibility to any association, and the nature of the exposure is such that pulmonary effects might be expected. However, ident. officers with the highest apparent use of powders over the longest periods of time, did not exhibit a prevalence of respiratory illness higher than those with the least exposure, and not other evidence indicated increasing risk with increasing exposure to particular agents. The possibility remains that an undemonstrated association with a constituent of some or many powders, or an association with an agent other than a powder exists. Alternatively, the biologically relevant exposure may be a combination of agents; the methodology of the present study could not determine whether such interactions are occurring. The present study cannot be taken as supporting either possibility.

It is difficult to make recommendations concerning measures that may be taken to reduce the risk of illness, in view of this lack of evidence about which agent or group of agents may be involved. Powdering is done primarily at crime scenes. The nature of the evidence often dictates that no measures beyond personal protective measures such as wearing masks for respiratory protection are really practical. In the lab situation, the possibility of protection against exposure via engineering measures such as fume hoods is obviously greater. The investigators opinion based on a year's observation and discussion with a large group of ident. officers is that most do not use even the personal protective measures that are available, such as masks, when dusting in the field. Protection is generally much better and apparently adequate in the labs. At the least, the results of this study reinforce the wisdom of using those personal protective measures that are available under field conditions.

### **FOR FURTHER INFORMATION:**

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