

National Center for Forensic Science
TWGFEX Fire Debris and Explosives Analyst Survey
Final Results

Prepared by: Christina M. Frederick
University of Central Florida
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Part 1: Study Design, Administration, and Data Collection

The Chair's committee began the current TWGFEX survey in October of 1998. William McGee, of NCFS, approached the Survey Research Laboratory at UCF to develop, administer and analyze a survey to be sent to all TWGFEX fire debris and explosives analysts.

The survey was developed by the chair's group, in conjunction with Dr. Christina Frederick of the UCF Psychology Dept. The final version of the survey included 56 questions for a total of 308 variables. It addressed demographic issues such as: age, sex, laboratory location, educational background and professional memberships of each analyst. Other questions on the survey focused on job responsibilities, continuing education and training issues, internet resource availability, and information dissemination practices.

NCFS sent a first mailing of the survey in early December to 600 TWGFEX analysts. In January a follow-up letter was sent to all analysts reminding them of the survey and asking them to complete the survey, if they had done already done so. By the end date of March 15, 1999, 216 usable surveys had been returned, making the return rate for the project 36%. This response rate is excellent considering the busy time of year the survey was sent, the length of the survey and the fact that no incentives were provided to increase the response rate.

Part 2: Demographic Results and Issues of Representativeness

As with any survey, which seeks to accurately assess member's attitudes and opinions, representativeness of the sample is an important issue for this survey. Demographic

information collected as part of the TWGFEX survey would indicate that the responses collected represent a broad and representative cross section of the population.

Demographic Information:

- a. Average Age of Respondent: 42 years with a range from 23 year to 74 years
- b. Sex of respondents: 159 men
47 women
- c. Number of states represented: 44 states plus Australia
- d. Type of Laboratories: 22 responses from private laboratories
57 responses from local laboratories
110 responses from state laboratories
24 responses from federal laboratories
- e. Level of Education: 144 respondents had Bachelor's level degrees
57 respondents had Master's level degrees
12 respondents had Ph.D. level degrees
- f. Years of Experience: Average of 12 years of Fire Debris experience
Average of 12 years of Explosives Analysis experience
- g. Percentage of Workload: Devoted to Fire Debris Analysis 42%
Devoted to Explosives Analysis 21%

Part 3: Key Issues Arising from the Survey

a. Supervisory Issues: Survey items 9, 10, 11,12

Respondents indicated that they agreed supervisors should have experience in the field to manage laboratories. Two to five years of field was deemed optimal to then become a laboratory manager. If an individual did not have fire debris or explosives experience, 5-10 years of experience were deemed necessary for that person to hold a supervisory position. Only 50% of the sample indicated that their supervisor had experience in fire debris or explosives analysis.

b. Accreditation: Items 13-16

Fifty-nine percent of the sample reported that their lab held accreditation, more than likely from ASCLD. Of those not accredited, 28% of the sample reported that their laboratory was seeking accreditation, again more than likely from ASCLD.

c. Training Issues: Items 21-25

Respondents reported a need for 6 months to a year of on-the-job training was needed for inexperienced analysts. For those with experience, between one and six months of training was deemed optimal. Important issues to be covered in training for both fire debris and explosives analysts included: preservation of physical evidence, laboratory safety procedures, rules of evidence and recognition of physical evidence. Fire debris analysts needed more specific training or coursework in analytical examination of fire debris and ignitable liquids. Explosives analysts needed specific training in different types of explosives, composition of low and high explosives, and analytical examination of materials. For analysts in training, trainings related to instrumental and chemical analysis were perceived to be most important.

d. Continuing Education and Training Issues: Items 26 and 27

Experienced analysts reported a high level of interest in training courses in many areas including: instrumental analysis of explosives residue, advanced explosives analysis and explosives microscopy - preferably at regional locations. Analysts also listed as desirable were trainings provided and funded by federal agencies, trainings done by NCFS and regional trainings provided through professional organization.

e. Competency and Proficiency Testing: Items 29-35

A large majority of laboratories report engaging in both competency and proficiency testing. However, differences exist between external proficiency testing (reported to occur once a year) and internal proficiency testing, which almost half the laboratories report they never do.

f. ASTM Standards and Guides: Items 41-44

Two-thirds of the respondent report adherence to ASTM-E30 standards. Adherence to other ASTM guidelines varies from a low adherence rate for ASTM-E1385-95 and E1413-95 to high adherence rates reported for E1387-95 and E1618-94. Respondent indicated E1387-95 and E1618-94 were of great value to reporting results of laboratory analyses.

g. General Continuing Education Issues: Items 46-48

Respondent indicated high levels of interest in taking on-line continuing education courses. Eighty percent indicated that their laboratory provides partial or full funding for continuing education, however encouragement from the laboratory to take such courses falls at a medium level.

h. Importance of General Resources: Item 49

Participants indicated that creation of a glossary of terms for fire debris and explosives analysis, creation of a database for reference materials related to analytic

techniques, creation of a library of manufacturers' literature and creation of a database of explosives analyst training manuals and materials were the most important resources needed at the current time.

i. Internet Resources: Items 50 and 51

A majority of respondents (86%) reported access to the WWW and internet resources within their laboratories. Of those respondents with internet access, utilization of on-line resources was deemed to be high.

j. TWGFEX Issues: Items 52-54 and 56

Two-thirds of the sample reported that they were familiar with the TWGFEX organization. However, most felt it was important to have such a group engage in a variety of activities including: maintenance of an internet library of fire debris and explosives analysis materials and promotion of continuing education courses. TWG organizations should best disseminate information via mailed notices or through an internet website. As evidenced by their response to item "h" in question 56, respondents were very interested in participating in the TWGFEX group.

Part 4: Recommendations for Action

Based upon the results of the survey, the following are recommendations for follow-up activities that TWGFEX can consider in the upcoming months.

1. Have the chairs of each committee, identify survey items that address issues central to their group's mission. Based on the responses to these items, each group can develop a plan to address core issues and engage in goal setting activities for the next 1-5 years.

2. Within each group, brainstorm new ways to analyze and utilize survey information. Think laterally. For example, using Excel or SPSSx, the survey can be subdivided using demographic information. If a group wants to address training issues for analysts with less than five years of experience, then those individuals can be pulled from the set and their responses to training questions examined separately. To be effective in this type of analysis, identify a group member who is proficient in the use of SPSSx or Excel, and provide that person access to the survey data.

3. More specifically, the survey addresses some key issues, which seem to "jump" out of the analysis. The first key issue relates to training and continuing education. There is a need for continuing education for both new and experienced analysts. In addition, NCFS and TWGFEX were both identified as possible providers of regional or internet-based trainings. As a larger group, the TWGFEX chairs should address creation of training opportunities. The second issue, which became apparent, was the need for TWGFEX to become more visible to those individuals who may want to participate in the group's activities. A third of the sample were unaware of TWGFEX. The chairs should examine methods for recruitment of new members. The last issue that was seen to be a major theme in the survey results was the extent of internet availability for analysts. Respondents indicated that they had access to the internet and that they desired fire debris and explosive analysis resources and training to be made available via the WWW. Expansion of the TWGFEX and NCFS website(s) to address these desires should be a future consideration.

4. Plan for a future survey. Goal setting in a one to five year framework using survey results is the immediate issue for the chair's group. However, after implementing changes or new activities, based upon the survey, the group needs to assess whether or not their activities have been successful. A five-year follow-up survey, incorporating both old and new items, would be appropriate.

