# Overview of the Work of NFPA 77: Technical Committee on Static Electricity

Charles G. Noll
Chair, NFPA 77
XiPro Technologies LLC
phone: (1) 215-453-8508
e-mail: cgnoll@mindspring.com

***Abstract*—The National Fire Protection Association's project addressing static electricity was initiated in 1936 and its 2014 Edition was issued by the Standards Council on 28 May 2013 with effective date 17 June 2013. On that effective date it also became an American National Standard. NFPA 77 has primary responsibility for documents on safeguarding against the fire and explosion hazards associated with static electricity, including the prevention and control of these hazards. It also has primary responsibility for conductive and static-dissipative floors, except as this subject is addressed by the Committee on Health Care Facilities. NFPA 77 is a consensus committee serving industrial process operators, and works with international standards groups and various industrial safety interests to harmonize the description of the hazards and foster their prevention and control.**

## I. Introduction

### *A. Scope of Committee's Work*

NFPA 77 has primary responsibility for documents on safeguarding against the fire and explosion hazards associated with static electricity, including the prevention and control of these hazards. It also has primary responsibility for conductive and static-dissipative floors, except as this subject is addressed by the Committee on Health Care Facilities [1].

### *B. About NFPA*

The National Fire Protection Association (NFPA) was founded in 1896 and its mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. It is a non-profit organization based in Quincy, MA, in the United States and has worldwide individual membership exceeding 70,000. NFPA develops, publishes, and

disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks [2].

NFPA staff in the United States and abroad develops collaborative relationships with government, fire and life safety officials, and professional, industrial and technical organizations across the globe to promote the use and adoption of its codes and standards. Partnering with the fire service, code development and enforcement authorities, and design professionals such as architects and engineers, NFPA makes its technical information available to support countries and regions in developing or enhancing their codes, standards, and safety practices.

As part of its commitment to enhancing public safety, NFPA makes its codes and standards available online to the public for free at http://www.nfpa.org/codes-and-standards/document-information-pages. You may recognize the National Fire Protection Association by its logos - Fig. 1.


Fig. 1. Logos of the National Fire Protection Association

### *C. Official Statement of Scope for the Document NFPA 77: Static Electricity*

1.1 Scope.

1.1.1 This recommended practice applies to the identification, assessment, and control of static electricity for purposes of preventing fires and explosions.

1.1.2* This recommended practice does not apply directly to shock hazards from static electricity. However, application of the principles set forth in this recommended practice can reduce such shock hazards to personnel.

1.1.3* This recommended practice does not apply to the prevention and control of static electricity in hospital operating rooms or in areas where flammable anesthetics are administered or handled.

1.1.4* This recommended practice does not apply to lightning.

1.1.5* This recommended practice does not apply to stray electrical currents or to induced currents from radio frequency (RF) energy.

1.1.6* This recommended practice does not apply to fueling of motor vehicles, marine craft, or aircraft.

1.1.7* This recommended practice does not apply to clean rooms.

1.1.8 This recommended practice does not apply to control of static electricity and static electricity hazards involved with electronic components, which have their own requirements.

Any item with an asterisk (*) beside its paragraph number has appendix material in *NFPA 77: Static Electricity* that generally refers readers to documents that are applicable. I bring this to your attention, because it is important for you to know where our interest lies and what other areas of electrostatics are of concern to NFPA. Our primary focus is on industrial electrostatic processes.

The committee operates under NFPA administration and support, and our liaison with NFPA is Mr. Robert Benedetti.

## II. Responsibilities of Chair and Technical Committee Members

Members and the Chair of NFPA technical committees are mindful that their guidance document and recommendations are used at the plant level by individuals working with the development and operation of manufacturing processes. The users are generally not experts in the research areas of electrostatic processes. The primary concern of everyone involved is safety. *NFPA 77: Static Electricity* is a source for plant-safety protocols, decisions on insurability, and discovery where there might be injury or death from a fire or explosion.

In any user situation, the Authority Having Jurisdiction must make decisions based on experience and knowledge gained from documents and consults as needed. Commercial processes are typically proprietary and only the owners of those processes know what is unique to them in such ways that an Authority Having Jurisdiction can function appropriately. The work of this committee serves the expressed needs of industrial applications where electrostatic processes are active.

*NFPA 77: Static Electricity* is one recognized source of industry experience. It is a recommended and not required practice for operations involving static electricity. NFPA, NFPA Technical Committee 77, and its members do not guarantee safety in any application. There are disclaimers and such in all NFPA documents and no comment made here extends or validates meaning of the guidance.

*NFPA 77: Static Electricity* is a consensus document. It is not a research document. NFPA requires the committee to be composed of a diverse membership, including balanced representation from manufacturers, users, insurers, special experts, researchers, etc. Before an applicant can be appointed to the committee, a formula is applied to assure the balance is maintained through the appointment. Most committee members have more than 20 years experience in electrostatic safety. Special experts are typically consultants or retirees, and often must be placed on a waiting list until other representations can be increased or a special expert leaves the committee.

I joined NFPA 77 in 1996 and became Chair in 2006. When you become Chair you commit to be in that position for ten years. I am charged to facilitate discussion yet not determine what is acceptable content of our document. In a meeting the existing and proposed changes are discussed by those in attendance - all revision is in projection at live meetings or on computer screen by electronic conference. After discussion at a meeting, recommended changes are sent out for consideration by the entire committee and there is a committee vote. In time and after possible additional discussion and revision, the pro-

posed changes and reasons for those proposed changes are sent out for public comment. We then meet again to answer concerns. There is a well-planned schedule for comment, review, voting, etc., that ultimately leads to a revised document.

There is a process for changes to *NFPA 77: Static Electricity,* and peer review is an open process of public comment. Much of the work of the committee addresses concerns raised by the public and changes are considered made by consensus of the committee. The change process is automated and tracked through online services. Approved changes are identified in each revision of the document. There is typically a three-to-five year revision cycle.

Work continues between revision cycles and NFPA Documents may be amended by the issuance of Tentative Interim Amendments or corrected by Errata. An official NFPA Document at any point in time consists of the current edition of the document together with any Tentative Interim Amendment and any Errata then in effect.

There is much more to be said about the operation of a consensus committee, and I will provide some of that at the meeting of the IEEE-IAS Electrostatic Processes Committee in October 2014.

## III. Status of Work and Revisions

The 2014 Edition of NFPA 77: Static Electricity was issued by the Standards Council of NFPA on 28 May 2013 with effective date 17 June 2013. On that effective date it also became an American National Standard.

The document contains new material and numerous revisions. I will not list them here; you can find them highlighted in the document in subject areas that interest you.

The major change occurs in the outline of the document, and this reflects the intent to expand some sections in future editions. We are following developments in Europe and seeking to establish some guidance and conformity in areas such as filling of vessels, hoses/fittings, powder/bulk solids handling, etc. In areas of fundamentals, there is an ongoing struggle over the use of intensive/extensive quantities to describe hazard conditions. What seems somewhat obvious to researchers is very complex in applications that are multidisciplinary and spanning many industries.

*NFPA 77: Static Electricity* now contains eighteen chapters. I'll attempt to group them so that you can see what the document is all about:

- Chapters 1-4 Set the stage - administration; referenced publications; definitions; units and symbols of measure.
- Chapters 5-8 Gives general direction - fundamentals of static electricity; evaluating static electricity hazards; control of static electricity and its hazards by process modification, static eliminators, and personnel factors.
- Chapters 9-12 Liquids - flammable and combustible liquids and their vapors; fluid flows in piping, hose, tubing, and filters; containers and intermediate bulk containers; and bulk storage tanks and tank vehicles.
- Chapters 13-14 Process vessels and operations in process vessels.
- Chapters 15-16 Powders and dusts and intermediate bulk containers for powders.

- Chapter 17 Web and sheet processes.
- Chapter 18 Miscellaneous applications - spray applications and coating, belts and conveyors, explosives, cathode ray tube video display terminals (X), plastic sheets and wraps.

There are ten appendices including glossary, bibliography, and other informational references. These appendices help form the context of recommended practice, but are not part of the recommendations of the document.

## IV. Conclusion

Since 1936 the National Fire Protection Association has been supporting industry with guidance to help safeguard industrial process operators from the hazards of static electricity. NFPA 77: Static Electricity consists of nineteen members, three alternates, and a non-voting Emeritus Member.

The current issue of our guidance document issued in May 2013, and we are welcoming new materials for the next edition through our web-based revision processing system. We also seek additional membership from the research community, safety-related associations, manufacturers, and users of electrostatic processes.

## References

[1] NFPA 77® Recommended Practice on Static Electricity (2014 Edition). Available from NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, USA.

[2] NFPA Website: http://www.nfpa.org/about-nfpa.