Report of the Committee on

Cleanrooms

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Dallas, TX [SE]

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Robert G. Backstrom, Underwriters Laboratories Inc., IL [RT]
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Rep. National Electrical Manufacturers Association
Lawrence A. McKenna, Hughes Associates, Inc., MD [SE]
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Robert W. Stubblefield, Duke Engineering & Services, TX [SE]
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Rep. NFPA Industrial Fire Protection Section
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Alternates

Stephen L. Fox, Intel Corporation, OR [U]
(Alt. to D. H. Collins)
R. Bruce Fraser, Simplex Grinnell, MA [M]
(Alt. to W. R. MacDonald)
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(Alt. to S. P. Caley)
Derek A. White, Hughes Associates, Inc., MD [SE]
(Alt. to L. A. McKenna)

Staff Liaison: David R. Hague

Committee Scope: This Committee shall have primary responsibility for documents on fire protection for cleanrooms.

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of this book.

The Report of the Technical Committee on Cleanrooms is presented for adoption.

This Report on Comments was prepared by the Technical Committee on Cleanrooms, and documents its action on the comments received on its Report on Proposals on NFPA 318, Standard for the Protection of Cleanrooms, 2000 edition, as published in the Report on Proposals for the 2002 May Meeting.

This Report on Comments has been submitted to letter ballot of the Technical Committee on Cleanrooms, which consists of 27 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.
NFPA 318 — May 2002 ROC — Copyright, NFPA

318-1-(Entire document) : Accept
SUBMITTER: Technical Committee on Cleanrooms,
COMMENT ON PROPOSAL NO:318-5
RECOMMENDATION: Revise to read as follows: Emergency Alarm. When hazardous chemicals are transported through service corridors, exit access corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or approved alarm initiating device, at intervals no greater than 150 feet and at each exit and exit-access doorway throughout the transport route. The signal shall be relayed to the emergency control station and shall initiate a local alarm.
SUBSTANTIATION: Replaces confusing and awkward statements with language similar to that used in UFC Article 80. 8.10.4 can be deleted as it is provided for in the statement.
COMMITTEE ACTION:Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall
EXPLANATION OF NEGATIVE:

318-2-(Entire document) : Accept
SUBMITTER: Technical Committee on Cleanrooms,
COMMENT ON PROPOSAL NO:318-5
RECOMMENDATION: Delete Section 4.8 in Proposal 318-5, revise Section 8.1 in the proposal to read as follows: Add new section 8.1.3, 8.1.4 & 8.1.5 as follows: 8.1.3 Vessels containing hazardous chemicals located in or connected to a work station shall be protected from physical damage. 8.1.4 Chemicals or gas vessels shall be protected from seismic forces. 8.1.5 Workstations containing hazardous materials shall be provided with horizontal clearances of not less than 3 ft (914 mm) where servicing is required such a cylinder change or hand pouring of chemicals.
SUBSTANTIATION: Currently, NFPA 318 does not speak to these issues. The remaining portions of 4.8 are addressed in the electrical code or Chapter 8 and need not be repeated.
COMMITTEE ACTION:Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-3-(1-5) : Accept
SUBMITTER: Technical Committee on Cleanrooms,
COMMENT ON PROPOSAL NO:318-5
RECOMMENDATION: Revise as follows: Exhausted Enclosure. Exhausted enclosures provide secondary containment for pieces of equipment, mechanical fittings or valves providing a means of local exhaust for capturing potential gases, fumes, vapors and mists resulting from abnormal conditions. Gas Cabinet. Doors, view ports and control access ports that are incorporated to allow for cylinder change, visual inspection and access to manual controls. Hazardous Chemical Storage and Dispensing Room. A room used in conjunction with or serving a fabrication area where hazardous chemicals are stored, used or transferred from vessels in the room through piping systems to a fabrication area. Fabrication Area (Fab Area). An area within a semiconductor fabrication facility and related research and development areas in which there are processes using hazardous production materials. Such areas include cleanrooms, process equipment support areas, parts clean and ancillary rooms that are directly related to the fab area processes. Semiconductor Fabrication Facility. Buildings or portions thereof used for the fabrication of semiconductors and related research containing quantities of hazardous materials exceeding the maximum allowable quantities of Level 5 contents permitted in control area.
SUBSTANTIATION: Exhausted Enclosure. A gas valve manifold box, chemical valve box and floor regulator boxes, are common exhausted enclosures in use. By the existing definition, be excluded from the requirements if interpreted literally. These enclosures are considered secondary to the primary containment. The existing examples listed are in themselves stand-alone pieces of equipment designed as primary containment. The difference is important as requirements are applied to exhausted enclosures such as sprinklers. Gas Cabinet - “are allowed to be included,” suggests that a cabinet without doors or access is the standard. Windows should be required to allow for visual inspection and verification of valve status without having to open the cabinet or access port. Hazardous Chemical Room - The term “used” in the definition is vague unless the definitions from the UFC, Section 222-U for “Use-Closed System” or “Use-Open System” are incorporated into NFPA 1. Suggest modifying the term to read “This is the terminology used in Chapter 5 of NFPA 318. If left as is, could be interpreted to mean any room in which hazardous materials were “used” without regard to quantity and subsequent risk. Fabrication Area (Fab Area) - The current definition includes areas such as offices and gown rooms that do not use hazardous chemicals and should not be included in the definitions. Process support areas such as sub-fabs or parts clean have been added. Semiconductor Fabrication Facility - The proposed UFC definition only creates confusion. The NFPA 5000 Building Code Chapter 33 refers to semiconductor facilities as proposed above.
COMMITTEE ACTION:Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-4-(1-5) : Accept
SUBMITTER: Technical Committee on Cleanrooms,
COMMENT ON PROPOSAL NO:318-5
RECOMMENDATION: Revise definition as follows: Incompatible Materials. Materials which when making contact with each other in an upset condition, can react in a manner that generates heat, fumes, gases or byproducts which could cause damage to life and property.
SUBSTANTIATION: The definition should be written to allow for safe practices. If enforced literally, fundamental processes could not be performed, waste drains and exhaust systems would be segregated to degrees yet unheard of at significant cost and no benefit.
COMMITTEE ACTION:Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-5-(2-1.2.3) : Accept
SUBMITTER: Technical Committee on Cleanrooms,
COMMENT ON PROPOSAL NO:318-5
RECOMMENDATION: Remove “exhausted enclosures” from the requirement and delete section 2.1.2.3 from NFPA 318, proposed language would read as follows: 2.1.2.3* Gas Cabinets and Exhausted Enclosures. Sprinklers shall be installed in gas cylinder cabinets and exhausted enclosures that contain hazardous chemical flammable gases. Exception: Sprinklers are not required in gas cabinets located in a hazardous chemical room or gas room, other than those cabinets containing Pyrophoric gases.
SUBSTANTIATION: As written, the current language could apply to fume hoods etc.
COMMITTEE ACTION:Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall
EXPLANATION OF NEGATIVE:
BENSON: I fail to see the rationale for deleting the requirement for automatic sprinklers in gas cabinets containing flammable gases just because they are in a gas room. The possibility of a fire in the cabinet is just as likely in gas room or out. NFPA 318-2000, 2.1.2.3 is correct. Is the proposed language correct? The phrase “exhausted enclosures” is still in the proposed language. What was intended here? The proposed language could still apply to FUME hoods.

318-6-(2-1.2.6) : Reject
SUBMITTER: Robert J. Pearse, Jr., Industrial Risk Insurers
COMMENT ON PROPOSAL NO:318-10
RECOMMENDATION: Add: “A listed carbon dioxide system that does not restrict exhaust capabilities of the fume exhaust system shall be permitted as an alternative to sprinklers.”
SUBSTANTIATION: This technology is being developed and used in Europe and Asia. There is no reason to prevent this technology from being accepted by the standard. The key is for the development of systems that will extinguish the fire without compromising exhaust capabilities.
COMMITTEE ACTION:Reject
COMMITTEE STATEMENT: Listed technology does not currently exist.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE:27
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

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EXPLANATION OF NEGATIVE:
KIRSON: Carbon dioxide provides a viable alternative to sprinklers installed in exhaust ductwork. I personally witnessed a series of successful tests of CO₂ exhaust duct fire suppression system, under differing circumstances, at Fenswil Controls of Japan, Ltd’s Hackjiori R&D Center in suburban Tokyo. Fenswil has installed the CO₂ duct fire suppression system in cleanroom fabrication facilities throughout Japan.
The Committee’s justification for rejecting the comment was that no such systems are currently listed. This reasoning is inconsistent with the arguments made to include spot smoke detection, during Committee deliberations and on the floor of the Association’s Technical Committee Report Session, May 17, 2000, Denver, CO. Since the comment specified a listed system, the lack of current listing does not create any problem. However, rejection of the comment defeats the development and encouragement of new technologies.

COMMITTEE ACTION: Accept

COMMITTEE STATEMENT: The change to 2.3.5 was not intended to limit the use of filter media or Class II filters. The change to 2.3.5 was not intended to allow Class II filters (allowing 8 ft flame front) should be removed.

EXPLANATION OF NEGATIVE:
KIRSON: The Committee Statement on the Committee Action is that “recent test data has shown thatNotifier View Spot Detector did operate promptly in a cleanroom environment” is vague and misleading.
1. Such “test data” was not peer reviewed.
2. This “test data” was not submitted to the Committee members for their review prior to the Committee meeting.
3. “Promptly” is undefined. It is not indicated whether the alarm conditions complied with the requirements of NFPA 318-2000, Art 2.3.1.
4. There is no indication of how many test were conducted. A single test would not be sufficient justification to change the prior requirement for air sampling smoke detection.

At the Dec 1999 meeting of the Technical Committee on Cleanrooms, the Committee voted to retain the requirement that a listed or approved air sampling smoke detection system be provided for cleanroom fire protection, as noted on page 129 of the 2000 ROC, re: Proposal 318-7 on Proposal 318-17. The words “air sampling” were deleted from NFPA 318 by a vote on the floor of the Association taken at the Technical Committee Report Session, Committee on Cleanrooms, on Wednesday, May 17, 2000, in Denver, CO.

1. No performance criteria for acceptance of other forms of smoke detection within the cleanroom environment currently exists within NFPA 318, or elsewhere.
2. The Notifier View™ spot-type smoke detector is not proven in cleanroom applications.
3. The UL test which justified listing the Notifier View™ spot-type smoke detector for use in air streams up to 4,000 cfm is inadequate for cleanroom applications. This small scale test configuration utilizes 1 sq ft duct. With the exception of air velocity, this UL acceptance test in no way approximates the conditions encountered in state-of-the-art cleanroom air streams/paths, particularly the the sheer size [cross-sectional area] of the air stream. It is in no way representative of a cleanroom air path and is a total misapplication of the listing process.
4. The UL testing does not verify the sensitivity [0.03%/ft obscuration required in 318] when performing the High Velocity Tests. The tests only verifies that the detector will not false alarm in limited high air flow conditions [usually up to a max. of 4500 fpm] and will respond to a gross smoke test [anywhere within the UL acceptable window -0.5-4%/ft obscuration]. UL does not presently have the capability to measure 0.03%/ft obscuration. UL requires a 90 day trial period before the Notifier View™ spot-type smoke detector can be programmed for the 0.03 to 0.5 % per foot concentration and the UL requires a fixed test configuration utilizing a 1 sq ft duct. With the exception of air velocity, this UL acceptance test in no way approximates the conditions encountered in state-of-the-art cleanroom air streams/paths, particularly the sheer size [cross-sectional area] of the air stream. It is in no way representative of a cleanroom air path and is a total misapplication of the listing process.

The use of smoke removal systems in an occupancy with hazardous gases and chemicals is a very real life safety issue for fire department personnel responding to a fire in a fab with the tool probably involved in the fire possibly constructed of a plastic material producing larger amounts of corrosive and toxic combustion byproducts.
318-12-(4-2) : Accept

SUBMITTER: Technical Committee on Cleanrooms,

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Delete Section 4.2 in NFPA 318.

SUBSTANTIATION: This adds one hour separation requirements for fabrication areas in addition to occupancies. Proposed Section 4.2 in Proposal 318-5 (Log CPW7) remains.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

PROPOSAL NO: 318-12-(4-4.1) : Accept

SUBMITTER: Technical Committee on Cleanrooms,

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Delete Section 4.4.1 in NFPA 318

SUBSTANTIATION: Expands the scope (fabrication) and clarifies the section on clean rooms being electrically unclassified. Section 4.4.1 in Proposal 318-5 (Log CPW7) remains.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

KIRK: See my Explanation of Negative on 318-12 (Log #CC7).

PROPOSAL NO: 318-14-(4-5) : Accept

SUBMITTER: Technical Committee on Cleanrooms,

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Delete Sections 3.5.1, 5.1.4.3, 6.4.3(l) & 6.5.3(b).

SUBSTANTIATION: Consolidates all the emergency power systems requirements into new Section 4.5.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

KIRK: See my Explanation of Negative on 318-12 (Log #CC7).

PROPOSAL NO: 318-15-(4-8, 8.1.3, 8.1.4 and 8.1.5) : Reject

SUBMITTER: Dennis H. Collins, Intel Corp.

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Revise Section 8 to address physical protection, seismic support and horizontal servicing clearances.

Add new section: Section 8.1.3 Vessels containing hazardous chemicals located in or connected to a work station shall be protected from physical damage.

Add new section: Section 8.1.4 Chemical or gas vessels shall be protected from seismic forces.

Add new section: Section 8.1.5 Workstations containing hazardous materials shall be provided with horizontal clearances of not less than 914 mm (3 ft.) where servicing is required such a cylinder change or hand pouring of chemicals.

Delete Section 4.8 from the UFC.

COMMITTEE STATEMENT: Duplicate Log

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

PROPOSAL NO: 318-16-(4.8, 8.1.3, 8.1.4 and 8.1.5) : Reject

SUBMITTER: Dennis H. Collins, Intel Corp.

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Delete Section 4.8 from the UFC.

SUBSTANTIATION: Currently NFPA 318 does not speak to these issues.

The remaining portions of 4.8 are addressed in the electrical code or Chapter 8 and need not be repeated.

COMMITTEE STATEMENT: At the request of the submitter. See Committee Action and Statement on 318-2 (Log # CC9).

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

Hazardous Chemical | State | Maximum Amount
--- | --- | ---
Corrosives | Gas Liquids Solids | 800 cubic feet 100 gallons* 40 pounds
Flammable | Gas Liquid Solids | 9,000 cubic feet 75 gallons* 10 gallons
Oxidizers | Gas Liquid Solids | Not limited a. 50 gallons* 40 pounds
Pyrophorics | Gas Liquid | Refer to Section 6.4.1 5 gallons
Unstable Reactive Class 3 | Liquid | 10 gallons
Water Reactive Class 3 | Liquid | 10 gallons

* The amount of material may be doubled in closed systems.

Delete Appendix A.8.2.1. Quantities can be doubled in closed systems (no hand pouring).

SUBSTANTIATION: Currently NFPA 318 does not speak to these issues.

The remaining portions of 4.8 are addressed in the Electrical Code or Chapter 8 and need not be repeated.

COMMITTEE ACTION: Reject

PROPOSAL NO: 318-17-(Table 5-1(A)) : Accept

SUBMITTER: Dennis H. Collins, Intel Corp.

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Revise proposed Table 5.1.A.

All quantities listed in Table 5.1.A should be increased by 2X.

SUBSTANTIATION: The combination of larger factories and the increased wafer size (2 ft - 12 in.) requires higher densities to meet current manufacturing needs. An example of this is a new building of 170,000 ft² of clean room would be limited to around 8-12 tools under the proposed Table 5.1-A limits (Class 1-A flammable liquids) based on the general use of solvents. In the same example increasing the limits by 2X would allow me to spread 16-20 vs. 8-12 tools over 6 square city blocks. The intent of the existing code was to limit the fire risk from high density use of chemicals in limited areas, not to limit the number of workstations in the overall fab. In the case of solvent stations they are now generally constructed of metal and they are fed from a bulk source with very little hand pouring so no substantial fire risk exists. Flammable gas cylinders spread out over such a large area present no additional risk.
COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

STUBBLEFIELD: The intent of the comment effectively doubles the quantity of flammable and combustible liquids within semiconductor facilities without consideration of the effect on the facility’s suppression systems from significant increases in fuel loading. No consideration for these impacts was provided in the substantiation. Therefore, I cannot support significant increases in these materials without further investigation into the impact to other systems.

COMMITTEE STATEMENT: At the request of the submitter. See Committee Action and Statement on 318-18 (Log # CC14).

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

AFFIRMATIVE: 23
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: I disagree strongly with the removal of the NFPA 318-2000, 6.6.2 wording. The issue here is not only a fire protection issue but also a life safety issue. Eliminating high pressure cylinders of highly flammable and toxic gases inside the fab (not back in the gas vault) and using sub atmospheric sources when the process will allow it is a safety “no brainer”. We should be driving this type of new and safer technology just like RFO’s and automated cylinder valves. 318-2000, 6.6.2 should remain a requirement in NFPA 318.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.

COMMITTEE ACTION: Accept
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 22
NEGATIVE: 1
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: This new requirement should be 6.6.2.1 with NFPA 318-2000, 6.6.2 retained. (See my Explanation of Negative on Comment 318-21 (Log # CC14). In the proposed definition, what is an “electronic gas” and is the correct word for sub atmospheric? The systems shall be placed in exhaust piping connected to the building exhaust system.
SUBSTANTIATION: Stack monitoring is more effective and reliable than trying to monitor large air streams.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 23

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-26-(8-9.2.4) : Accept

SUBMITTER: Technical Committee on Cleanrooms,

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Revise to read as follows:

8.9.2.4 Exit Access Corridors. When gases are transported in piping placed within an exit access corridor or in proximity to the corridor in such a way as to pose a threat to occupants, should a leak occur, gas detection shall be provided to warn occupants and signal an emergency response.

SUBSTANTIATION: As currently written in Article 51, this paragraph is confusing. Most companies make a practice of prohibiting mechanical fittings in HPM gas delivery lines unless containment and/or adequate general or exhaust ventilation is present to reduce the risk to life and property. NFPA 318 paragraph 6.3.3 specifies “Tubing, piping, and fittings shall be welded.” Placing gas detectors in general areas where welded piping passes through, to detect and warn were the high integrity piping to fail, is not an effective or efficient use of gas detection resources. Potential leak sources are effectively limited to the points where mechanical fittings are located and this is where detection efforts should be located to provide the earliest warning in the event of a leak. Gas piping should not be placed in exit corridors. Service corridors where populations using them are limited are a different situation. There the protection appropriate to control the hazard should be employed. And these may vary depending on the circumstances.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 23

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-27-(8-9.3, 8.9.3.1, 8.9.3.2) : Accept

SUBMITTER: Technical Committee on Cleanrooms,

COMMENT ON PROPOSAL NO: 318-5

RECOMMENDATION: Replace proposed sections 8.9.3 Gas Detection Systems Operations, 8.9.3.1 Monitoring & 8.9.3.2 Alarms with the following:

8.9.3.1 Monitoring. Gas monitoring equipment when required by this standard to warn of the presence of leaked gas, shall be capable of detection and alarm initiation at or below the following gas concentrations:

a. Immediately dangerous to life and health values (IDLH) when the monitoring point is in an exhausted enclosure.

b. PEL levels when the monitoring point is in an area outside an exhausted enclosure.

c. 25 percent of LEL or LFL when monitoring point is within or outside an exhausted enclosure.

Add IDLH definition to Section 1.5 as follows:

Immediately Dangerous to Life and Health (IDLH). Concentration of chemical or gas in the air that would cause some kind of permanent health damage in a 30 minute exposure.

SUBSTANTIATION: The greatest potential for leaks from toxic and highly toxic gas exist where there are mechanical fittings at cylinders, distribution points and the connection to the tool in which the gas will be used. This standard requires these points to be enclosed and exhausted. To provide the earliest warning of a gas leak, monitoring air being drawn through these enclosures has become industry practice.

As personnel are not typically present within the enclosures, it should be acceptable to monitor at the IDLH level vs. PEL. The IDLH level does allow time for employees that could be inside or near the enclosure at the time of gas leak to safely evacuate the area.

Allowing for the higher alarm set point will help reduce false alarms, reduce analytical time and provide some flexibility with the many gases and gas monitoring equipment that need to be used. Monitoring at very low levels can also lead to false alarms. The monitoring of occupied areas will not change.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 21

NEGATIVE: 2

NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

EXPLANATION OF NEGATIVE:

BENSON: I agree with the negative vote of Mr. Stubblefield and his comment. The changes to 8.9.3.1 are acceptable but 8.9.3.2 should not be deleted. If it is, there are no alarm requirements. STUBBLEFIELD: The substantiation and text change address the scope of 8.9.3.1, but does not address the alarm annunciation requirements of 8.9.3.2. Local indication of an IDLH condition is necessary in order to allow time for employees to safely evacuate, which is critical to the substantiation. I do not support this change as long as 8.9.3.2 is deleted. Otherwise, the change is acceptable. Also, Section 6.6.3 of the 2000 Edition requires a local alarm for the detection of toxic or flammable gases.
11.1.2 The fire department shall be informed of architectural changes.

RECOMMENDATION: Revise Section 11.1.2 to read as follows:  
11.1.2 The fire department shall be informed of architectural changes effecting access and egress, use, materials, occupancy, warning and controls or other function that could impact their emergency response.

SUBSTANTIATION: Provides clearer guidelines for reporting "major" changes.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-29-(10) : Accept

SUBMITTER: Technical Committee on Cleanrooms,
COMMENTS: Accept

RECOMMENDATION: Delete the words "on the premise".
Chapter 10 – Emergency Control Station.

RECOMMENDATION: Delete the last sentence in this section as follows:
11.2 Emergency response team. Responsible persons shall be designated to an on-site emergency response team and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses; identifying locations where hazardous chemicals are stored, handled and used; and shall be familiar with the chemical nature of hazardous chemicals. An approved number of personnel for each work shift shall be designated.

SUBSTANTIATION: This should be a performance requirement based on the scope of the ERT’s performance. If they are to be merely liaisons, then the numbers will be smaller than if they engage in spill cleanup and remediation or incipient fire fighting. The size, complexity and logistics of the operation and site dictate what is needed.

Changing "is" to "are" is editorial.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-30-(11-1.1) : Accept

SUBMITTER: Technical Committee on Cleanrooms,
COMMENTS: Accept

RECOMMENDATION: 11.1.1 Plans and Diagrams.
11.1.1 Plans and diagrams shall be maintained in approved locations indicating architectural features, use function, and the approximate plan equipment placement for each area; the amount and type of hazardous chemicals stored, handled and used; locations of shutoff valves for hazardous chemicals supply piping; emergency telephone locations; and locations of exits.

SUBSTANTIATION: The sentence was an awkward statement. Plans showing architectural features are what are needed.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall

318-31-(11-1.2) : Accept

SUBMITTER: Technical Committee on Cleanrooms,
COMMENTS: Accept

RECOMMENDATION: Revise Section 11.1.2 to read as follows:
11.1.2 The fire department shall be informed of architectural changes effecting access and egress, use, materials, occupancy, warning and controls or other function that could impact their emergency response.

SUBSTANTIATION: Provides clearer guidelines for reporting "major" changes.

COMMITTEE ACTION: Accept

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 27
VOTE ON COMMITTEE ACTION: AFFIRMATIVE: 23
NOT RETURNED: 4 Backstrom, Fraust, Lattanzio, and Randall