



FQ0670/8

Report on ISO TC 92 SC4 Meeting, April 2010

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Report on ISO TC 92 SC4 Meeting, April 2010

1. CLIENTS

- Foundation for Research Science and Technology
- BRANZ
- Department of Building and Housing
- Standards New Zealand

2. BACKGROUND

The purpose of this report is to provide information to BRANZ, Standards New Zealand (SNZ) and the Department of Building and Housing (DBH) about the activities of ISO TC92 SC4 (fire safety engineering) and to serve as a record of attendance at ISO TC 92 SC4 during the week of October 19 – 23, 2010 in Christchurch, New Zealand.

2.1 Background for attendance at meeting and representation on committee

The Foundation for Research Science and Technology, BRANZ and the Department of Building and Housing are funding research to develop a risk-based design fire tool in recognition of the need for the development and support of design methodologies that will lead to greater robustness and confidence in fire safety engineering design. The current review of the Building Code by DBH may also lead to significant changes to how fire safety engineering is conducted in New Zealand. The possible adoption of several ISO TC92 produced documents is also being considered as part of a fire safety engineering framework.

ISO TC92 SC4 is an International Standards Organisation sub-committee that is responsible for developing international standards and guidance documents related to fire safety engineering. New Zealand participation in ISO TC92 SC4 and its associated working groups provides an important opportunity to ensure the New Zealand research, and new Building Code changes benefit from international linkages by working closely with other international experts in this field as well as providing an opportunity to learn from and influence international directions in fire safety engineering.

2.2 Structure of ISO TC 92 SC4

This sub-committee consists of the main plenary group supported by a number of working groups and task groups. Most of the actual work done takes place in the working and task groups.

The meetings attended included the following:

- Task Group 1 (convenors meeting)
- Working Group WG1 (general principles and performance concepts);
- Working Group WG6 (design fires);
- Working Group WG7 (verification and validation of calculation methods);
- Working Group WG9 (calculation methods);
- Working Group WG10 (fire risk assessment);
- Working Group WG11 (behaviour and movement of people);


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- Working Group WG12 (fire performance of structures);
- Joint meeting with SC3 on life safety criteria based on toxic hazard
- SC4 plenary session

The various working groups are currently drafting a range of documents, some of which will ultimately become international standards. Depending on the final intended application of a document and its stage of development the following abbreviated notations are used in identifying relevant documents:

PWI	preliminary work item
NP	approved work item
WD	working draft
CD	committee draft
DIS	draft international standard
FDIS	final draft international standard
DTS	draft technical specification
TS	technical specification
TR	technical report
DTR	draft technical report
IS	international standard

A technical specification (ISO/TS) is reviewed/balloted after three years in order to decide if it will be confirmed for a further three years, revised to become an international standard or be withdrawn. Final outputs are either technical reports or international standards, with a strong preference for the latter wherever possible.

3. ACTIVITIES

3.1 Working Group TG1 (meeting of convenors)

Convenor: J Kruppa, France.

Meeting No. 22 (19 April 2010, 9.30 am)

This was a general meeting of working group convenors to liaise on the program for the week and brief each other on common issues and items to be discussed in the working groups during the week.

Matters relevant to the work programme included:

- A reminder of the obligation of P-Members to vote on draft (DIS) and final draft (FDIS) International Standards.
- ISO has an e-committee capability using 'GoToMeeting' for those working groups who wish to use it.


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- Launching Ballots for DIS 16732 "Guidance on fire risk assessment" and DIS 16737 "Requirements governing algebraic equations – Vent flows" – Revision of ISO 16737:2006.
- Publication of ISO/TS 24679 "Performance of structures in fire".
- Systematic Review of ISO/TS 16733:2006.

Future meetings will be held in Hangzhou, China (25th – 29th October, 2010) and in Paris, France (3rd – 8th April, 2011).

3.2 Working Group WG1 (general principles and performance concepts)

Convenor: Prof. Takeyoshi Tanaka, Japan

Meeting No. 3 (20 April 2010, 2.00 pm)

Nineteen experts from seven countries were present at the meeting.

Prof. Tanaka proposed a new work item to develop examples of fire safety objectives and functional requirements. There was discussion on the scope of the project and whether there should be a distinction made between mandatory objectives or not.

Dr Hall proposed to conduct a study with Mr J Weise looking into safety concepts for fire frequency versus fire size or severity including the effects of fire sprinklers and fire resistance of specified reliability.

There was a great deal of discussion on a new example in the form of an annex to main document (ISO/FDIS 23932) showing objectives, functional requirements and safety criteria. Different countries had a different understanding of what constitute objectives versus functional requirements. Coming to a common understanding of a definition is needed. Dr Hall will provide a suggested re-edit of Prof. Tanaka's draft example and also of the French proposal. We need to consider a few different approaches for the same example to find a form of the example that will be generally acceptable to the Working Group.

3.3 Working Group WG6 (design fire scenarios and design fires)

Convenor: C. Wade, New Zealand

Meeting No. 21 (21 April 2010, 9.00am)

Twenty experts from seven countries were present at the meeting.

This working group has previously produced a Technical Report ISO/TR 13387-2 Fire Safety Engineering - Part 2: Design fire scenarios and design fires, as part of the suite of ISO/TR 13387 reports.

More recently this has been supported by Technical Specification ISO/TS 16733 "Fire safety engineering – selection of design fire scenarios and design fires" published on the 7 July 2006. Two examples of the selection of design fire scenarios are presented in the technical specification: for a multipurpose covered stadium, and for a warehouse containing a single commodity.

The guidance provided in ISO/TS 16733 is of a general nature and takes users through the process (steps) of identifying design fire scenarios and their characteristics. It does not give any detailed specifications (i.e. numerical values) for design fires to be used for any particular occupancy. The technical specification is written with a deterministic


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assessment in mind and therefore is aimed at providing guidance on how to reduce a very large number of possible fire scenarios down to a manageably small set of design fire scenarios (scenario clusters) that can be used in an analysis.

ISO/TS 16733 was subjected to systematic review with the ballot closed in December 2009. For the recommended action, 9 countries voted to Confirm; 1 country Confirm With Corrections; and 9 countries abstained. Two countries supplied comments (France and Japan) and these were discussed at the meeting. Some changes to TS 16733 will be made to accommodate the comments received.

Work item: PWI 29241

WG6 is in the process of developing two examples of the selection of design fires characteristics to accompany the design fire scenarios given in Annex B and Annex C of ISO TS 16733. The first example is for a multi-purpose covered stadium and the second for a warehouse with a single commodity. The intention is to follow the subsections of ISO TS 16733 Section 7 to illustrate its use.

Since the previous meeting, C. Wade had updated the example by combining the existing material in Annex B with the new material characterising design fires and distributed to the task group, and then to the work group members prior to the meeting.

WG6 considered that the example is developing well but requires additional text in step 1 supporting the fire location selection. It may be ready at the next meeting for a resolution for balloting to be put to SC4.

There was no discussion related to the second example of a warehouse building.

Other business:

SC3 and SC4 joint meetings led by D. Gann of NIST previously identified topics of potential new work items. One of the possible areas of activity was related to developing guidance for how to go about grouping finished products in relation to their toxic species production given it is not practical to expect that all products would be able to be tested. There was no further discussion on this item and it has previously been suggested that a related seminar might be held in conjunction with the next full TC92 plenary in April 2011 to identify the state of knowledge in this area.

A suggested work item to extend the covered stadia example to include an evaluation of concentration/tenability of the fire effluent was discussed. C. Wade and D Gann will develop more detailed statement of scope for the proposed work before the next meeting.

A draft table containing a list of data requirements for WG6 was discussed and a task group comprising C. Wade, J. Hall, N. Benichou, K. Harada and D Gann will review the table before the end of July and report back to the next meeting. This table could potentially be further developed as a new annex to ISO/TS 16733.

3.4 Working Group WG7 (verification and validation of calculation methods)

Convenor: Mr Dieter Brein, Germany


Meeting No. 21 (20 April 2010, 9.00am)

Nineteen experts from seven countries were present at the meeting.

Main Document: ISO 16730 Fire safety engineering -- Assessment, verification and validation of calculation methods (Published in July 2008).


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ISO 16730:2008 provides a framework for assessment, verification and validation of all types of calculation methods used as tools for fire safety engineering. It does not address specific fire models, but is intended to be applicable to both analytical models and complex numerical models that are addressed as calculation methods in the context of this International Standard. It is not a step-by-step procedure, but does describe techniques for detecting errors and finding limitations in a calculation method.

ISO 16730:2008 includes the following:

- a process to ensure that the equations and calculation methods are implemented correctly (verification) and that the calculation method being considered is solving the appropriate problem (validation);
- requirements for documentation to demonstrate the adequacy of the scientific and technical basis of a calculation method;
- requirements for data against which a calculation method's predicted results shall be checked;
- guidance on use of ISO 16730:2008 by developers and/or users of calculation methods, and by those assessing the results obtained by using calculation methods.

This working group is now dealing with six work items.

Work item: ISO/NP TS 13447 Guidance for the use of fire zone models

This project with C Wade as task leader and principal author is underway in order to address particular characteristics of zone models with special emphasis on ranges of applicability, limitations etc.. This is done in order to ultimately make clear where zone models may be used and where it can be wise to apply more elaborated approaches, i.e. CFD models. A WD manuscript is available and will be further developed by a Task Group. This work will be of direct practical use to New Zealand engineers with BRANZ fielding many enquiries from the FSE community about the applicability and limitations of the BRANZFIRE zone model for specific applications.

Dr Brein described a concern in Germany that it may be the impression of readers of the document that there are too many limitations such that zone models may not be particularly useful at all, with the AHJ not accepting zone models used for fire safety designs applications.

C. Wade said it is important that we publish information of this type and try to educate the users of the models about their limitations. Dr Benichou agreed with this.

It was considered that we should add a further paragraph between Section 8 and 8.1 to introduce the following material, asking users to determine if any of the effects that follow are relevant for their application.

J. Kruppa suggested that another document be developed providing a list of which kind of computer models could be used for what applications.

Dr Hall suggested there would be 3 choices:

1. if you are using a model for a particular type of application, a particular effect is not relevant and could be ignored;
2. a modification can be done and that would be acceptable; or
3. a different model should be used (ie. This limitation does not exist in a CFD model).


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ISO 16312 Part 1 (from SC3) may contain useful material in the informative annex for characteristics affecting combustion product yields.

Work item: PWI 24677 Data for validation of calculation methods

This currently comprises a draft contents list and some text outlining the principal procedures and requirements for data. The reason behind this work is, that quality requirements need to be defined for the usability of independent reference data as reliable sources for validation and assessment purposes for calculation methods of any kind of sophistication.

There was no further discussion of this item.

Work item: ISO/NP TR 10796- 1 through 4:

4 examples on calculation methods are developed to demonstrate the applicability of procedures described in ISO 16730 on distinct calculation methods for several types of physics based mathematical models (zone model "CFAST", CFD model "ISIS", structural model "WALL2D" on predicting the fire performance of wood-framed wall assemblies) as well as for equation based calculation methods (egress model "EXIT89"). The examples are developed as stand-alone Technical Reports, but may later on be included in a revised IS 16730 as (informative) Annexes.

Four draft documents are available, in different stages of completion. The CFAST example was discussed and the project leader will be asked to reformat the example to match the other examples.

3.5 Working Group WG9 (calculation methods)

Convenor: Prof. K Harada, Japan.

Meeting No. 22 (22 April 2010, 9.00am)

Twenty-three experts from eight countries were present at the meeting.

WG9 are preparing documents describing the use of specific calculation methods relating to various fire phenomena and also describing the limitations of calculations as well as the actual equations is seen to be important.

There are three relevant work items for WG9:

1. PWI 16737: a revision to ISO 16737 Fire safety engineering -- Requirements governing algebraic equations -- Vent flows
2. PWI 24678: for algebraic equations on flashover-related phenomena.
3. PWI 29763: for thermal radiation from pool fire flames.

Work item: PWI 16737

PWI 16737, revision of the International Standard ISO 16737:2006 "Fire safety engineering - Requirements governing algebraic equations - Vent flows". The DIS balloting to reconfirm the standard for a further 5 years closed on 15th March 2010. WG9 asks ISO/TC 92/SC4 to confirm the systematic review results of ISO 16735:2006.

Work item: Revised PWI 24678

Requirements governing algebraic equations on flashover related phenomena. Project Leader N. Alvares was not at the meeting, so K. Harada presented his comments and invited further comments from those present at the meeting.


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Discussion regarding multiple openings and how they are accommodated in the single room, single vent formula. K. Harada presented an alternative formula. It was noted that no experimental data existed to check the multiple vent formula for $A\sqrt{H}$.

Working Group members agreed that further development of the document should be continued by project leader N. Alvares in discussion with K. Harada.

Work item: PWI 29763

Revised Drafts on PWI 29763: Requirements governing thermal radiation from pool fire flames. K. Harada showed a draft of this document. Working Group members agreed that further development of the document should be continued by project leader A. Alvarez with the assistance of T. Tanaka.

Other business:

The development of a new technical report on flame spread calculations was discussed. Perhaps it could be modelled on ISO 16312 and identify the characteristics or phenomena to be addressed. Dr. Harada will ask Dr. Kim of Korea to act as project leader, C. Wade volunteered to be a member of a smaller task group.

3.6 Working Group WG10 (fire risk assessment)

Convenor: Dr. John Hall, NFPA, USA.

Meeting No. 21 (23 April 2010, 9.00am)

Experts from seven countries were present at the meeting.

This working group has previously prepared ISO/TS 16732 guidance on risk assessment for use in fire safety engineering. This document has been published.

TS 16732 provides the conceptual basis for fire risk assessment by stating the principles underlying the quantification and interpretation of fire-related risk. These fire risk principles apply to all fire-related phenomena and all end-use configurations, which means these principles can be applied to all types of fire scenarios.

TS 16732 has recently begun DIS balloting with an example annex consisting of NWI 29243, Part II (Benichou's example using Firecam). Balloting will close on September 9, 2010.

Work item: PWI 29242

This covers the two common examples with WG6. These examples are being developed within WG6 and it is expected that they will be able to be used as a basis for WG10 examples at a later time.

Work item: PWI 29243

This includes N. Benichou's example using Firecam for a multistorey office building which is the most advanced example and in relatively good shape. There was no further discussion on this example.

Work item: PWI 12607

This was approved between the meetings in USA and New Zealand, with an industrial example from France (N132). This example focussed on a BLEVE incident in a propane storage facility. A lengthy discussion of the draft prepared by the project leader (J. Taveau) who was not present at the meeting. Dr Hall will discuss the comments with the project leader who will continue to develop the example.


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Other business:

There was some discussion of a draft N134 Technical Report on access to and use and interpretation of fire incident statistical data for scenario quantification with emphasis on nations lacking a suitable national fire incident database. Dr Hall has previously circulated a brief outline, and described some comments received from a small task group. Dr Hall will continue to develop the draft with the assistance of others.

3.7 Working Group WG11 (Behaviour and movement of people)

The convenor is Rita Fahy, USA

Meeting No. 21 (21 April 2010, 2.30pm)

Eighteen experts from seven countries were present at the meeting, two of whom participated via the internet from Sweden (D. Nilsson, Lund University) and USA (E. Kuligowski, NIST).

Work item: PWI 29761 Occupant behavioural scenarios

A new draft of Preliminary Work Item 29761 (WG11 N75) on 'Design Occupant Behavioural Scenarios and design Behaviours' (project leader Dr. Fahy), was briefly discussed at the meeting. An amended text will be circulated for consideration at the next WG11 meeting. It was decided to maintain the status as PWI for the present, until a more definitive text has been agreed.

An example is also being developed in parallel with the WD 29761. There was much discussion on the proposed example based on the covered stadium example from WG6 and in particular the relationship between the fire scenarios and the occupant scenarios, and to what extent they can be developed independently and where they link to each other. The task group will continue their work on the example and report back at the next meeting.

Dr Robbins volunteered to work on second example including both fire scenarios and occupant behavioural scenarios for a residential facility with an elderly population.

3.8 Working Group WG12 (fire performance of structures)

Convenor: Dr Nouredine Benichou, NRC, Canada

Meeting No. 13 (22 April 2010, 2.00pm)

Twenty-four experts from seven countries were present at the meeting including a number of students and staff from the University of Canterbury.

Work item: ISO/WD 24679 Fire safety engineering – Performance of structures in fire

This working group is currently engaged in the preparation of a technical specification for guidance on structures in fire for use by fire and structural engineers. Following the meeting in Lancaster, the SC4 secretary sent the document for publication. The WG12 convenor and SC4 secretary received comments from the ISO Technical Editor that needed to be addressed before the document can go for publication. At the meeting, these comments were fully addressed. The convenor will finalize the document and will send it to the SC4 secretary for submission to ISO Central Secretariat for publication. This will be done before the next SC4 meeting.


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The progress of the NWI was presented as follows:

Development of examples to follow the methodology of the main document. The purpose of an example is to show how well ISO/WD 24679 is working and to identify areas where improvement or change is necessary. Two examples were submitted: one from Greece and one from Japan. However, only one example was discussed since the delegates from Greece could not attend the meeting. Dr Benichou described the possible structural steel example from Greece, but it appeared to be focused on single elements which could be limiting for the example.

The second example from Japan is a case study of a multi-storey steel frame building with fire in a computer suite and potential fire spread from floor to floor.. This example will be further developed and presented again at the next meeting. The Japanese delegation will provide detailed specifications by the end of May, 2010. They will also update the example calculations and will send it to the convenor by the end of August, 2010. There were other countries that have expressed interest in developing examples. These countries include New Zealand which is contributing 2 examples: one by the University of Canterbury and another one by BRANZ. China, France and the USA are the other countries willing to develop an example. Lead contacts have been identified for each example and these contacts will send an outline to the convenor by the beginning of September for discussion at the next meeting. The convenor will send all the documents related to the examples by the mid to end of September 2010.

Data Needed by WG12:

Data needed for FSE practitioners for structures in fire. The convenor presented an initial document of potential data. This work will be done in collaboration with SC2 and their input is very important. A task group was formed and will continue to work on this project. The convenor will collect information from the members and will circulate an updated version of the data document by mid to end of September, 2010.

C Wade suggested that if there are existing items that also appear in the TC92 vocabulary document then make sure they are consistent. The purpose of the table is to provide guidance to practitioners but it may also be able to indicate where data is lacking, research needs etc.

Dr. Brein talked about the safety factor concepts and requirements to allow for the uncertainty in the design parameters. While it is a task for SC4 in general, every working group needs to consider safety concepts as well. This concept may be included in the main document (24679) when the document is ready to move from a TS to an IS. The concept will be further discussed the next meeting.

At this stage there is a minimal start on the work to move the Technical Specification to an International standard (more normative language will be implemented in this new document).

3.9 Joint Meeting SC3/WG5 and SC4

Convenor: Dr D Gann, NIST

Meeting No. 5 (19 April 2009, 2.00pm)

D. Gann summarised and updated the status of the list of potential new work items previously prepared for discussion and consideration by the various work groups in SC3 and SC4. The list is included as Appendix A of this report.


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3.10 SC4 plenary session - 23 April 2009, 2.00pm

Chairman: Dr Joël Kruppa

Secretariat : AFNOR – Mr Benoît Smerecki

The working group convenor reports were presented at the plenary session.

A copy of the resolutions made by SC4 are given in Appendix B.

The University of Canterbury was thanked for providing the meeting facilities and particularly Dr Charles Fleischmann and Colleen Wade for the meeting organisation.


Location and date of next meeting: Hangzhou, China, October 25 – 29, 2010.

4. SUMMARY

This report summarises activity in ISO TC 92 SC4 on fire safety engineering as discussed at the April 2010 meeting in Christchurch, New Zealand.


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APPENDIX A



ISO/TC 92/SC 3/TG 3 N 25

**Candidate Work Items for
Matrix for Use of Tenability and Smoke Toxicity
in Fire Safety Engineering
RGG; revised from SC3 N1
March 12, 2010**

SC3

1. Standard on requirements for large-scale test methods to represent toxic gas and smoke hazards in different fire scenarios. Document on scenarios for large-scale fire tests (**SC3 WG1**)

This International Standard will provide guidance for the set-up of large-scale fire tests which represent different well-defined fire scenarios, and presents guidance on the measurement of toxic gas and smoke hazards. It provides bases for comparing the results among different types and scales of such tests.

Status: Rough draft to be developed by SC3 and circulated to SC3 and SC4 (copies to SC1) for discussion, probably in Paris (04/2011); **Action: Dave Purser**

2. Normative documents on obtaining fire effluent data for finished products (**SC3 WG1**)
 - a. Standard for correlation of toxicity data among physical fire models and full-scale tests (**PWI 29903**)

This International Standard will provide principles for characterizing the yields of toxic gases from a laboratory fire test and provides bases for comparing the results among different types and scales of such tests. This Standard also includes consideration of the uncertainties in the gas yield determinations. The combined uncertainty is a key factor in the ability to establish similarity or difference of test results. The sufficiency of the agreement between a bench-scale test and a real-scale test depends on the needed precision in the fire hazard or risk assessment. This is not covered in this Standard.

Status: NWI approved; progression to a CD to be discussed in Christchurch.
Action: Per Blomqvist

- b. Bench-scale method for the determination of hazardous components of fire effluents (**ISO/TS 19700; controlled atmosphere cone calorimeter**)

ISO/TS 19700 describes a tube-furnace method for the generation of fire effluent for the identification and measurement of its constituent combustion products, in particular, the yields of toxic products under a range of fire decomposition conditions. The use of this apparatus is generally applicable to


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individual materials, to products that are layered such that the layering will not result in a significant change in product yields with time in real fires, i.e. to products where the upper surface does not provide major protection to the sub-layers. This method has been designed to provide data for input to hazard assessments and fire-safety engineering design calculations.

Interest has been expressed in SC1 WG5 and SC3 WG1 in using the controlled atmosphere cone calorimeter for this purpose.

Status: Completion of revised Rounds 1 and 2 of the round robin on ISO/TS 19700 scheduled for shortly after Lancaster. **Action: Richard Hull**

Plan for a small symposium on the use of the controlled atmosphere cone calorimeter in 10/2010. **Action: Eric Guillaume & Stephen Grayson.**

3. Technical Report on the effect of combustion conditions on effluent components
(SC3 WG2)

This document summarizes and interprets the findings of research on the variation of the yields of toxic compounds, visible smoke, and heat with combustion conditions, notably equivalence ratio and possible the chemical composition of the combustible.

Status: Compilation of sources of data for discussion in Paris. **Action: Not yet assigned.**

4. International Standard on calculation of wall losses of gases and smoke **(SC3 WGx)**

This document would include the published methods for assessing the decrease in gas and smoke concentrations as a function of distance from the fire. Non-normative annexes would compile the results of tests of wall losses.

Status: No action yet.

5. Examples of calculations of FED and ASET **(SC3 WG5)**

This Annex to **ISO 13571** provides examples of the use of the equations within the Standard.

Status: SC3 WG5 and SC4 WG11 to compile previous examples supplied by Experts. **Action: Examples from Purser and Su; for discussion in 2010/2011.**

6. Technical Report on the sub-incapacitating effects of fire effluent **(SC3 WG5)**

This document compiles and interprets the published literature on the effects of toxic gases, visible smoke, and heat at levels below those that lead to incapacitation.

Status: Solicit person to compile data from, e.g., AEGL documents. **Action: Dick Gann.**

7. Compilation of limiting hazard by product type and fire scenario **(SC3 WG5)**


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Status: No action yet.

SC4

1. Include consideration of tenability conditions in revisions of **ISO/TS 16733 (SC4 WG6) and ISO/TS 16732 (SC4 WG10)**

For both design fire scenarios and risk assessment, this would be in the form of new examples. In these examples, assumptions on the effects of delay in evacuation or incapacitation (before or during evacuation) would be included.

Status: Add to examples being developed in SC4 WG6. SC4 WG11 to also be involved. Perhaps use arena case. **Action: Colleen Wade, Dick Gann and David Purser, once arena case is further developed.**

2. Normative document on effects of smoke and toxicants on human behavior and judgment and thus on time required for escape (**SC4 WG11**)

This would be a follow-on to **ISO/DTR 16738** in **SC4 WG11**. It would include effects of toxicants on movement speed and choices. An annex would include treatment of statistical distribution of behavioral response. This is to be worked in conjunction with SC3 Task 6.

Status: No action yet, awaiting results of SC3 Task 6.

3. Include consideration of fire effects on people in document on selection and implementation of behavioral scenarios (**SC4 WG11**)

This would be an extension of **WD 29761**.

Status: Include in first revision of 29761, if not the first version. **Action: Rita Fahy, Dick Gann.**

4. Technical Report on relative importance of various fire scenarios, including guidance for jurisdictions that do not have fire incidence data compilations (**SC4 WG 10**)

This document would guide authorities on how to weight fire scenarios, including the likelihood that people would be moving within the occupancy.

Status: SC4 WG10 will start on this. **Action: John Hall.**

5. International Standard(s) on flame spread algorithms (**SC4 WG9**)

This Standard would establish criteria for equations and software for calculating fire growth, including changes in equivalence ratio that might affect combustion product yields, as in Item 3 under SC3.

Status: To be discussed in SC4 WG9. **Action: Kazunori Harada.**


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6. International Standard for fire growth capability in zone and CFD models **(SC4 WG7)**

This Standard would establish criteria for equations for effluent generation and transport models, including changes in equivalence ratio that might affect combustion product yields, as in Item 3 under SC3.

Status: Could be examples of application of ISO/TS 16730. No action yet.

7. International Standard on transport and losses of effluent and effluent components in zone and CFD models **(SC4 WG7)**, using output from Item 4 under SC3.

Status: Awaiting Task 4 document from SC3. An example could be developed in WG7.

8. Technical Report on approach to grouping finished products by magnitude and nature of effluent potency **(SC3/SC4 WG6)**

Since, for a single building, there are many combinations of combustible products present, it is unlikely that someone would examine all the possible fire scenarios and use the results to select chairs, carpet, wall coverings, etc. Therefore, this document would describe the basis for identifying products of ordinary burning rate and toxic product yields. It would also describe the basis for determining whether a product should be identified as "not ordinary," depending on the mass of the product, its burning rate, the yields of smoke and/or toxic gases, what other products might be burning at the same time, etc.

Status: SC4 will discuss this. **Colleen Wade and Dick Gann to coordinate.**

9. Guide to estimating ASET. **(SC3/SC4 WG?)**

This would be a guide to using all the above documents, along with other appropriate TC92 documents, for estimation of whether people would be able to escape from a fire.

Status: Could be a joint project between SC3 WG5 and SC4 WG1. No action yet.


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APPENDIX B

ISO/TC 92/SC 4 "Fire Safety Engineering" Resolutions Christchurch, New Zealand 23rd April 2010

Resolution SC4 N202 – Christchurch 1, 10/04/23 – Addition to the SC4 work programme of a Preliminary New Work Item.

- As proposed by WG1 in document SC4 N585.
- ISO/TC 92/SC 4 agrees to add to the SC4 work programme a preliminary new work item giving an Example of fire safety objectives and functional requirements for non-industrial buildings, subject to the agreement of TPMG, with Takey TANAKA as project leader.

Resolution SC4 N203 – Christchurch 2, 10/04/23 – Approval of ISO/TS 16733 for a second period as a TS.

- As proposed by SC4/WG6 in document SC4 N586.
- ISO/TC 92/SC 4 agrees to approve TS 16733 "Fire Safety Engineering – Selection of design fire scenarios and design fires" for a second period of 3 years as a TS.

Resolution SC4 N203 – Christchurch 3, 10/04/23 – Launch of a DTR Ballot for ISO/WD 10796-3 and 4.

- As reported by WG 7 in document SC 4 N 587.
- Considering that drafts ISO/WD 10796-3 "Fire safety engineering – Examples on verification and validation of a calculation method – Part 3: Structural model" and ISO/WD 10796-4 "Fire safety engineering – Examples on verification and validation of a calculation method – Part 4: Egress model" are nearing completion by SC4/WG 7.
- ISO/TC 92/SC 4 agrees to launch the DTR ballot in order to get comments to be considered at the next WG 7 meeting to be held in Autumn 2010.


CAW


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Resolution SC4 N205 – Christchurch 4, 10/04/23 – Result of the Systematic review balloting for a WG 9 document.

- As proposed by WG9 in document SC4 N588 and considering the results of the systematic review balloting.
- ISO/TC 92/SC 4 agrees to confirm ISO 16735:2006 on smoke layers as an international standard.

Resolution SC4 N206 – Christchurch 5, 10/04/23 – Addition to the SC4 work programme of a Preliminary New Work Item.

- As proposed by WG10 in document SC4 N589,
- ISO/TC 92/SC 4 agrees to add to the SC4 work programme a preliminary new work item in order to develop a TR on fire incident data useful for fire risk assessment and other fire safety engineering methods, subject to the agreement of TPMG, with John HALL as project leader.


CAW


GBB

