



# DOE-HDBK-1224-2018 HAZARD AND ACCIDENT ANALYSIS HANDBOOK UPDATE

## ***EFCOG Workshop – February 2020***

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# DOE-HDBK-1224-2018 IMPORTANT ROLE OF HANDBOOK



- Handbook touches many topics addressed in at least 10 other DOE standards and handbooks
  - DOE-STD-3009-2014
  - DOE-STD-3009-94 CN3
  - DOE-STD-3011-2016
  - DOE-STD-1120-2016
  - DOE-STD-1027-2018
  - DOE-STD-1228-2019
  - DOE-STD-1189-2016
  - DOE-STD-1020-2016
  - DOE-HDBK-1220-2017
  - DOE-STD-1104-2016
  - DOE-STD-1066-2016
- AU-31 vision is to maintain handbook as a living platform to capture crosscutting revisions to
  - Upcoming 10 CFR 830 changes
  - Related DOE standards and handbooks
  - DOE Central Registry codes
  - National consensus standards (ANS, ASCE)
  - DOE facility best practices and lessons learned



# SENIOR REVIEW COMMITTEE



- **Senior Review Committee (SRC) Commissioned to Ensure**
  - Handbook stays current and relevant as a living document
  - Relevant emerging issues are addressed and resolved
  - Contractor community (EFCOG) is engaged in the revision process
- **SRC Membership**
  - Patrick Frias (AU-31) – Project Oversight
  - Brian DiNunno (AU-31)
  - John McAllister – EFCOG Accident Analysis Task Group Liaison
  - Caroline Garzon (AU-31)
  - David Thoman
  - David Pinkston
  - Terry Foppe
  - Carl Mazzola
  - DOE/NNSA replacement for Jim O'Neil (retd)



# DOE-HDBK-1224-2018 STATUS



- Issued for 2-year “Interim Use” period on July 26, 2018 (<https://www.standards.doe.gov/>)
  - First publication of a very large and technically-complex document (418 pages)
- SRC addressing comments received and evaluating proposed new sections
  - New sections limited to whether they are relevant to DSA preparation and DOE-STD-3009 requirements
- Project Justification Statement (PJS) has been drafted to place Handbook into RevCOM soon after the interim use period has expired
- Criticality information from DOE-HDBK-3010-94 not related to ARF/RF may be moved into DOE-HDBK-1224



# DOE-HDBK-1224-2018 STATUS



- **Beyond correcting errata and adding selected new material, Handbook intended to also address (depending on their stage of development):**
  - **Updates to related 10 cross-cutting standards and handbooks that may have been updated or are being updated (e.g., DOE-HDBK-3010-94)**
  - **Updates resulting from changes to Federal regulations (e.g., 10 CFR 830, 10 CFR 851)**
  - **Version changes in DOE Central Registry codes (e.g., MACCS2, ALOHA)**
  - **Capturing advancements in state of the sciences, engineering practices, and modeling tools which are result in continuous improvements**
  - **Capturing new best practices and lessons learned**



# DOE-HDBK-1224-2018 STATUS



- **Interim period proposed changes to Handbook**
  - Correct typographic errors and omissions
  - Include late comments from AU-20 on Chapter 8
  - Add Purge flow and CLEL
  - Add new aircraft accident methodology (when approved)
  - Clarify loss of power for hazard and accident analysis and Beyond DBA/DBE evaluations
  - Add Sensible heat from fires that augment plume rise
  - Clarify or modify Time-Weighted Average algorithm
  - Add dust explosion (white paper being developed to decide)
  - Expand uranium hexafluoride discussion
  - Update to PAC/TEEL Revision 29A
  - Clarify evaporation algorithm to include Raoult's Law
  - Update for any Central Registry toolbox code version changes
  - Incorporate any DOE order/guide standard/handbook updates



# DOE-HDBK-1224-2018 STATUS



## ■ Projected Schedule

- Approval of PJS: Spring 2020
- New comments accepted through July 25, 2020
- Completion of draft RLSO and revision matrix: September 2020
- Pre-RevCOM SME review of RLSO
- Submission to RevCOM for 60-day review
- Resolve RevCOM comments and obtain concurrences
- Publish DOE-HDBK-1224-2021 by Fall 2021





# DOE-HDBK-1224-2018 TRAINING COURSE



- **AU-30 initiated development of a training course on Handbook in November 2018**
  - Focus on assisting analysts on how to use Handbook
  - Encourage student participation through team exercises
  - Duration: 3.5-day course (e.g., Tuesday to noon Friday)
  - Content: 10 technical sessions/22 exercises from selected Handbook sections
  - Objective: Turn over to National Training Center (NTC) to consider formalizing into “300-level” course (e.g., DOE-HDBK-3010-94)
- **NTC unable to pursue development as 300-level course no earlier than 2021 due to current NS qualification course commitments and need for additional resources**
- **AU-30 exploring options for providing training sessions at DOE sites and developing videos in 2020**



# DOE-HDBK-1224-2018 TRAINING COURSE



## ■ Course Sessions

<u>Session</u>	<u>Handbook Sections</u>
Atmospheric Dispersion	6.3, 6.4, 6.8, 6.11
Health Effects	8.2
Fires	4.2
Explosions	4.3
Spills	4.4
NPH Design	4.6
Man-made External Events	4.7
Chemical Source Terms	5.3
Chemical Dispersion & Consequences	9.3, 9.4, 9.5, 9.7
Chemical Scoping Calculations	9.8, 9.9



# CONCLUDING REMARKS



- **Significant Progress on Handbook-related Projects**
  - SRC has provided advice and guidance on comments received during interim use period
  - Handbook revision is being developed in real-time
  - 273 References sent to EFCOG NFS Accident Analysis Task Group for dissemination to DOE analysts completed
  - Two STD-3009 FAQs have been issued with several more planned, supported in part with HDBK-1224
  - A 3.5-day training course was developed and dry run at NTC
  - AU-30 evaluating several options to bring training to analysts
    - **Short videos**
    - **“Modularization” of training sessions to be negotiated with a DOE site for a 1-day, 2-day, or 3-day course**



# PRIMARY CONTACTS



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