PROCEDURE REVIEW & APPROVAL FORM	Page 1 of 1

Procedure Number: NScD-USER-108	Rev.0.0
Procedure Title: **NScD EXPERIMENT SAFETY AND HEALTH REVIEW**	

Description/Justification of Change

New procedure.

Does this revision impact any of the following processes/tools?

Process/Tool	NA	No	Yes	List specific impact and required action
User Portal	☐	x	☐	
IPTS	☐	x	☐	
User Tool	☐	x	☐	
ITEMS	☐	x	☐	
Experiment Scheduler	☐	x	☐	
External Webpage	☐	x	☐	
Internal Webpage	☐	x	☐	
Other NScD User Procedures	☐	x	☐	
Other (list):	☐	☐	☐	

Reviewers

Originator: Greg Rowland

Subject Matter Experts: Lisa Fagan, Paul Abston, Gabrielle Boudreau

Approvers

User Program & Outreach Group Leader

NScD Operations Manager

(Additional reviewers and approvers may be added as deemed necessary)

PURPOSE AND SCOPE

This procedure documents the review Experiment Safety and Health Review process for Neutron Scattering experiments at the Oak Ridge National Laboratory. The facilities where this research may be performed are the:

- High Flux Isotope Reactor (HFIR)
- Spallation Neutron Source (SNS)

The following organizations will work together as partners in the review process to ensure that a safe working environment is maintained at the SNS and HFIR Facilities:

1. Instrument Operations Groups

2. NScD Science Divisions

3. Directorate Support

4. Instrument and Source Division

For the purposes of this procedure Directorate Support will include the safety and health professionals in the Experimental and Laboratory Work Planning group at HFIR and SNS Safety and Health.

ENCLOSURES

NScD-USER-108, Pages 1 - 6
ATT A, Early Experiment Safety Screening, Page 1
ATT B, Flow Chart, Page 1

DISCUSSION

Researchers are required to define the scope of their experimental activities at the SNS and HFIR using the Integrated Proposal and Tracking System (IPTS) web-based system. Within the IPTS, Users are also required to prepare an Experiment Summary Sheet (ESS). The ESS will identify the materials, equipment, processes and hazards associated with the experiment and the controls required to mitigate hazards to an acceptable risk level. The ESS is generated automatically from the IPTS system. The ESH approval of the experiment and the ESS is valid until the listed completion date given in the IPTS. Resubmission of the proposal is required if the experiment is to be conducted after this time limit has ended or additional scope and/or significantly different samples have been added to the experiment.

PREREQUISITES

1. Proposal is entered into IPTS

2. Beam Time is allocated

ROLES AND RESPONSIBILITES

1. Researchers/Users wishing to conduct experiments at the SNS/HFIR are responsible for:

    1.1 Completing an electronic proposal in IPTS that:

        a. Describes the scope of the experiment, disclosing all materials (samples, reagents, equipment, etc.), facilities, and processes that will be used at the SNS/HFIR;

        b. Identifies known hazards associated with their activities;

        c. Describes the safeguards consistent with ORNL and SNS/HFIR standards

        d. Lists the Users that will be working at the SNS/HFIR

    1.2 Signing the ESS form confirming that all safety and health controls are in place

    1.3 Completing all required training prior to the beginning of the experiment work

    1.4 Working within the scope of and in conformance with the ESS

    1.5 Sharing opportunities for improvement on the experiment safety process with the SNS and HFIR and instrument personnel

2. NScD Directorate Support is responsible for:

    2.1 Assisting users in identification of hazards and controls consistent with the safe operation of SNS and HFIR facilities

    2.2 Reviewing ESSs in a timely manner

    2.3 Identifying to the appropriate NScD Science Divisions proposals that require extensive health and safety reviews and, if warranted, identifying the additional expertise to perform further hazard analysis

    2.4 Approving ESSs only after determining that they:

        a. Identify all significant risks to personnel and the environment

        b. Define a hazard control strategy capable of reducing risks to acceptable levels

        c. Document the controls on the ESS

3. Operations Division Directors are responsible for:

    3.1 Designating staff that can approve ESSs

4. User Programs and Outreach is responsible for:

    4.1 Administrating and maintaining a web-based system for entering proposals into IPTS. This system will support experiment safety reviews, the preparation of ESSs and will

provide a schedule for all User training.

5. Instrument and Source Division:

   5.1 Provides engineering resources as requested in areas such as electrical and pressure design to help identify all significant risks to personnel and the environment and define a hazard control strategy capable of reducing risks to acceptable levels.

6. Instrument Operations

   6.1 Assists users in identification of hazards and controls consistent with the safe operation of the SNS and HFIR facilities

7. Quantum Condensed Matter, Biology and Soft Matter and Chemical and Engineering Materials Group Leaders are responsible for:

   7.1 Performing proposal reviews for feasibility and scientific merit

   7.2 Discussing proposals as needed with potential Users when additional information is required

   7.3 Requiring NScD staff and Users adhere to the requirements identified in this procedure, thus preventing potential adverse consequences to the public, staff, and environment.

INSTRUCTIONS

1. Early Safety Review

   1.1 Team member for the research group submits experiment proposal into the system using the web-based IPTS system.

   1.2 Initial proposals are screened for specific safety and health areas through questions that if answered yes, trigger an Early Safety Review by Directorate Support to assess whether the experiment will require extensive planning and preparation.

   1.3 **IF** during the review, clarification is needed, **THEN** additional information is requested in the Comments/Clarification Instructions box (Figure 1).

   1.4 **If** ,in cases where it is determined that the proposed experiment will require significant planning and preparation, **THEN** further discussion will be held with Directorate Support, Instrument Operations and the appropriate Scientific Division to balance scientific importance with facility risk and resources before being marked :

      a. Acceptable

      b. Acceptable with Precautions

      c. Needs Clarification

      d. Rejected: Unacceptable Hazard

Figure 1

1.5 **IF** an Early Safety Review is not triggered, **THEN** the first hazard screening is performed during the Beam-time Allocation Committee (BAC) meeting.

1.6 As proposals are approved for beam-time they will be simultaneously screened against the major safety and health areas identified in Attachment A.

1.7 Proposals that require extensive preparation and planning for safety and health issues will be further discussed and the proposal will either not be allocated beam time or deferred for further discussion and eventually allocated beam-time or not.

2. Performing the Experiment Safety and Health Review

2.1 Following the BAC all approved and approved alternate proposals are available for safety review.

2.2 A detailed review of the proposal and the Statement of Research is performed.

a. Again, **IF** clarification is needed, **THEN** information is requested in the Comments/Clarification Instructions box (figure 1).

2.3 **IF** in cases where the detailed review identifies safety and health concerns requiring significant planning and preparation, **THEN** further discussion will be held with Directorate Support, Instrument Operations and the appropriate Scientific Division to balance scientific importance with facility risk and needed resources before being marked:

a. Acceptable

b. Acceptable with Precautions

c. Needs Clarification

d. Rejected: Unacceptable Hazard

2.4 Once the initial proposal is approved for beam-time and confirmed in IPTS by the experiment team, NScD Directorate Support reviews the submitted information to identify hazards and address any safety concerns.

2.5 **IF** clarification of the submitted information is needed, **THEN** Directorate Support staff will request additional information through the dialogue function of Experiment Safety Sheet (ESS) (located in IPTS). All dialogue is recorded and displayed on the ESS.

2.6 Once the anticipated hazards associated with the experiment are understood and the appropriate controls are documented on the ESS, the Directorate Support staff member documents the final Safety Review with an electronic signature (Figure 3). After final safety review the proposal will be marked (Figure 2) as:

a. Acceptable

b. Acceptable with Precautions

c. Needs Clarification

d. Rejected: Unacceptable Hazard

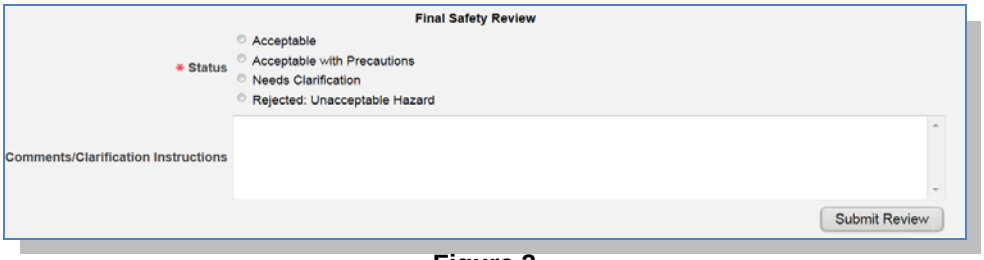


Figure 2

STEP 2.7

CAUTION

The approval is valid until the end date of the experiment as listed in the IPTS. An experiment that is to be conducted after the listed end date must be resubmitted for review and approval

2.7 Once signed (Figure 3) the ESS is available for instrument staff to print for review by the experimental team and verify specified hazard controls are in place, sign and post at the instrument.

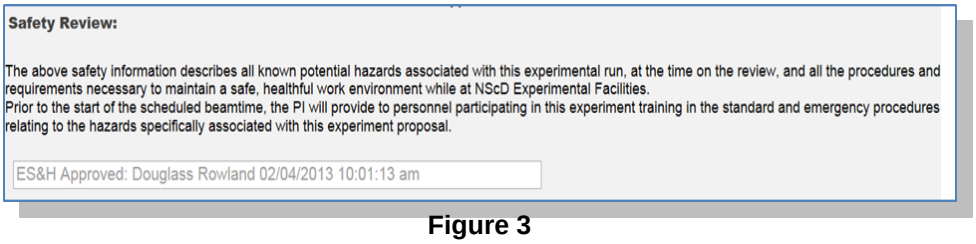


Figure 3

STEP 2.8

NOTE

IF a new sample is added in IPTS, **THEN** the proposal moves from "***ESH Approved***" status back to "***Needs Review***" status

2.8 **IF** significantly different samples are added to an approved and signed proposal, **THEN** the appropriate line manager for the science area **and** Directorate Support will be notified. **IF** approved by both groups, **THEN** a new ESS will be generated, with the subsequent approvals and signatures listed above.

REFERENCES

1. NScD-USER-105 Call for Proposals

2. NScD-USER-104 Experiment Operational Review

REVISION HISTORY

1. This instruction is the original issuance and does not replace an existing instruction or procedure

2. This procedure must be reviewed if modified

Experiment Safety

Save

NOTE: Click on the Question for More Information.

*Will your work involve nanomaterials? — (•) Yes ( ) No

Engineered nanoparticles are intentionally created (in contrast to natural or incidentally formed) particles with one or more dimensions greater than 1 nanometer and less than 100 nanometers. Unbound engineered nanoparticle (UNPs) are engineered nanoparticles that, under reasonably foreseeable conditions encountered in the work, are not contained within a matrix that would be expected to prevent the nanoparticles from being separately mobile and a potential source of exposure. An engineered nanoparticle dispersed and fixed within a polymer matrix, incapable, as a practical matter, of becoming airborne, would be "bound," whereas such a particle suspended as an aerosol or in a liquid would be "unbound."

*Are the nanomaterials contained within a matrix? — (•) Yes ( ) No

Is the material contained within a matrix(under normal temperature and pressure conditions) that would reasonably be expected to prevent the particles from being separately mobile and a potential source of exposure(exposure may result from inhalation, ingestion or ski contact).

*Will your work involve human subjects research or human bodily materials? — (•) Yes ( ) No

If yes, then the potential research must be discussed with the ORNL Human Subjects Research Coordinator to determine the level of review and application packet contents required by the ORNL Institutional Review Board. If the samples are from a human source (can include cells, blood, urine, tissues, organ, hair, nail obtained from a commercial source or private source), the PI will need to submit an application for review by the Institutional Review Board before the experiment to determine if the project falls under the requirements for human subjects research.

*Will your work involve animals? — (•) Yes ( ) No

If yes, then the potential research must be discussed with the ORNL Animal Care and Use Committee (ACUC) coordinator to determine the level of review and obtain the animal protocol application required by the ORNL ACUC.

*Will you bring any organisms or viruses, biological toxins (DOE select/etiologic agents), recombinant DNA , or DNA or RNA derived from recombinant DNA? — (•) Yes ( ) No

If yes, then the potential research must be discussed with the ORNL Biohazards Subject Matter Expert to determine the appropriate application process to the CDC or USDA.

1. If Risk Group 2 or biological or select agents or toxins are to be used, a completed Request for Project Review form must be submitted to the Institutional Biosafety Committee.
2. An additional copy of the registration package must be submitted to the DOE Contractor's Operating Representative for review and concurrence before work can proceed. Depending on the review outcomes, further submittals may be required for the CDC or APHIS.

Note: Newly enacted regulations require the approval of the Department of Justice for all persons who have access to the select agents and toxins.

*Will you bring any of the following isotopes: 233U, 235U, 237Np, 238Pu, 239Pu , 240Pu, 241 Pu, 242Pu , 241Am, 242mAm, 243Am, 243Cm, 244Cm, 245Cm, 247Cm, 249Cf, 251Cf? — (•) Yes ( ) No

If yes, additional review will be required by the SNS/HFIR Programmatic Health Physicist before beam time can be approved.

*Will you bring any electrical equipment that operates with ac and/or dc voltages greater than 50 volts or available current greater than 5mA RMS ac or 30 mA dc, or that is capable of an instantaneous release of more than 10 joules of energy and
- is not marked with a nationally recognized testing laboratory (NRTL) label, or
- has not been previously approved by an ORNL Electrical Equipment Inspector, or
- has been modified since being approved or NRTL labeled?

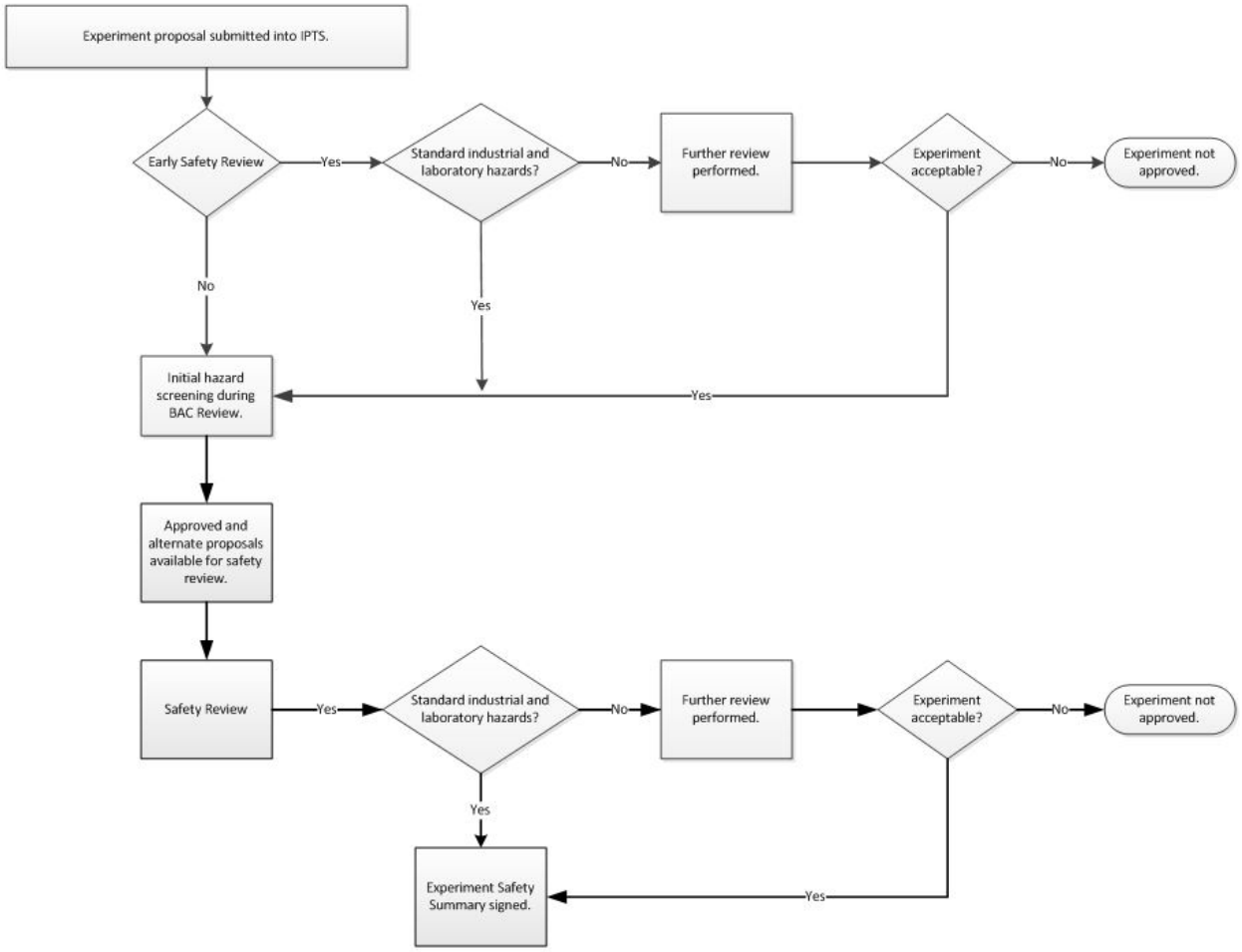
— (•) Yes ( ) No

If yes, this equipment must be evaluated before being operated at the SNS/HFIR. If user electrical equipment is found to be deficient, it may not be used at the SNS/HFIR. The SNS/HFIR will assist the user in an attempt to rectify any deficiencies in the equipment so that it may be used, but please be aware that any corrections may result in the loss of user beamtime.

*Will you bring any of the following reactive chemical hazards: explosives, peroxides, peroxide formers, pyrophorics, strong oxidizers, or water reactives? — (•) Yes ( ) No

If yes, give us a detailed explanation of the planned chemical use in the experiment description section of the experimental safety sheet. Additional review, postings, and training may be required.

Save


Experiment proposal submitted into IPTS.
Early Safety Review
Yes
Standard industrial and laboratory hazards?
No
Further review performed.
Experiment acceptable?
No
Experiment not approved.
No
Yes
Initial hazard screening during BAC Review.
Yes
Approved and alternate proposals available for safety review.
Safety Review
Yes
Standard industrial and laboratory hazards?
No
Further review performed.
Experiment acceptable?
No
Experiment not approved.
Yes
Experiment Safety Summary signed.
Yes