

PNC/XOR Instructions for Filling out an ESAF (Experiment Safety Approval Form)

Getting Started

You can log on with your badge number and password [here](#). If you don't yet have a password or have forgotten it, see the bottom of the web page for a link indicating how you can get a temporary password. If you do not yet have an APS User badge, you should contact the user office as soon as possible to obtain one. The phone number is 630-252-9090.

ESAF General Instructions

There are general instructions at the top of each page when filling out an ESAF. Please use them, and also feel free to contact the PNC safety coordinator, your beamline scientist, or any member of the PNC staff for assistance.

Helpful Hints for filling out your ESAF for PNC/XOR

Please remember that the purpose of the ESAF is for evaluation of the hazards, controls and overall safety of your experimental procedures and materials, not the scientific merit of your research objectives. If your ESAF is complete, accurate and well thought out, the process of getting it approved by APS and PNC will be pretty simple. See below for some helpful hints in filling out the sections which will receive the most scrutiny.

- 1.) **Materials List** – The materials list is the first area we look at to determine whether you are working with anything which could pose a risk of harm or injury to you or anyone else. Everything you plan to use during your run must be in this list. This includes not only the samples from which you plan to collect data, but also any chemicals you will use to prepare them. It is also very important that you indicate any hazards associated with each item. If something is in doubt, contact the PNC Safety Coordinator or anyone at PNC for assistance. It's best to err on the side of caution, and feel free to include any materials you think you *might* need. It's not a problem if you decide *not* to use something on your approved ESAF. But working with something that's not on the materials list is not permitted.
- 2.) **Description** – It says just above the text box *“Please supply a short description of the details of the proposed experiment, including samples, procedures, and proposed hazard controls (engineered and administrative). You may also attach PDF or Word documents.”* Feel free to make this a long description in order to explain how you plan to mitigate any hazards. File attachments are always welcome. *We will need details of your sample preparation and containment methods... please include them here, or in the Lab Use section.*
- 3.) **Equipment** – Please check all items in the list that you plan to use at PNC/XOR. Electrical devices, especially those which are custom or homemade, may need to be inspected by APS personnel before use.

- 4.) **Experimenters** – Everyone who will be working at PNC must be on this list. If there's someone you think *might* be here, put them on the list. It's not a problem if someone on the list doesn't show up. But it might be if someone not listed does.

PNC/XOR Common Hazards

There are many hazard types that require special handling or preparation in order to work with them at APS. As the researcher, you should know your materials and procedures better than anyone, so please include as much safety-relevant information as possible. Listed below are the most common hazard types we encounter at PNC, and what is required to work with them. Links to available information on the APS web site are also provided.

- 1.) **Radioactives** – Work with any element, isotope or other material that is associated with the emitance of radiation requires a review by the APS Health Physics Department. The APS must also be notified in advance of any shipment of radioactive materials. Contact PNC and the APS well in advance of your beam time. An SOP is required for work with radioactive materials. These are developed and tailored to suit each experiment.
- 2.) **Carcinogens and Other Chemicals** – Cancer causing substances require special handling, containment and labeling at APS. A Standard Operating Procedure (SOP) is also required, and can be written and tailored to the particular needs of each experimenter. In general, these substances are not to be open to air at any time, and the minimum PPE (personal protective equipment) for handling is gloves and protective eyewear. In many cases, our users prefer to prepare and encapsulate these materials in appropriate containment before transporting them to APS. This greatly simplifies the ESAF approval process. If preparation will be done onsite, it must take place in a contained environment such as the fume hood, glove box or a glove bag (all of which are available at PNC). Information on other types of chemical hazards is also available at the link above.
- 3.) **Biohazards** – When planning to work with any kind of biohazard at APS, it must first be determined what level of biohazard exists ([BSL-1](#), [BSL-2](#), [BSL-3](#) or [BSL-4](#)). This can generally be found in MSDSs which are available for most bacteria. *Note that work with BSL-4 rated agents and organisms is forbidden at APS and Argonne National Laboratory.* Please contact PNC or APS if you cannot determine the biosafety level. SOPs have been developed by the CDC for each level, and these are used at PNC. The appropriate SOP must be posted and followed during your run.
- 4.) **Human Tissues** – Due to the legal implications research involving human tissues, these experiments are subject to review by the ANL Institutional Review Board. This can be a lengthy process, unless a statement from your home institution's IRB, Ethics Review Committee, or similar group can be obtained indicating that your samples should be exempt from this

- review. Tissues which may be considered exempt can include archaeological specimens and samples from anonymous sources.
- 5.) **High Temperature** – The Description section of your ESAF should include the temperature at which you want to operate, and a detailed description of your heating device. Pictures and diagrams are often helpful as well, whether the device is custom or available commercially. As stated above, electrical devices are likely to be subject to APS review prior to use. All electrical devices must be plugged into a ground-fault circuit interrupt (GFCI) for use at APS.
 - 6.) **High Pressure** – As with high temperature devices, your ESAF should include a detailed description of the [Pressure Vessel](#), [Diamond Cell](#), or similar device, and the pressure at which you intend to operate. If custom equipment is to be used, please include test results and/or a review conducted by a qualified pressure engineer or review committee. Pictures of commercial equipment tags showing operating limitations are helpful.
 - 7.) **Lasers** – PNC has a Class IV Ti-Sapphire laser in the ID-C experimental hutch. Its use is supervised by [Dale Brew](#), the PNC Laser Control Area (LCA) Supervisor. Your experiment setup should be discussed in detail with him well in advance of your beam time. Laser Safety Training ([ESH120](#)) and a pre work eye exam are also required prior to working with all Class IV lasers at APS.
 - 8.) **Soil Samples** – Soil samples of Foreign origin, and even some from [certain areas within the United States](#) are regulated by the US Department of Agriculture. If possible, soils should be sterilized by heat treating according to USDA guidelines. If doing so would harm your samples, you must follow [APS protocols for handling regulated soils](#).

For Further Questions

If you have additional questions about filling out the ESAF, please contact Michael Pape, the PNC/XOR Safety Coordinator.

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