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| SLAC_Logo_hires_small | Chapter : [Cryogenic and Oxygen Deficiency Hazard Safety](https://www-group.slac.stanford.edu/esh/hazardous_substances/cryogenic/)    Product ID: [669](https://www-internal.slac.stanford.edu/esh/docreview/reports/revisions.asp?ProductID=669) | Revision ID: | Date Published: 29 May 2020 | Date Effective: 29 May 2020  URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/cryogenicsFormODHReview.pdf> | [docx](https://www-group.slac.stanford.edu/esh/eshmanual/references/cryogenicsFormODHReview.docx) |

This form is used to document the safety review required before introducing oxygen-displacing gases, including cryogens, into a work area or changing the existing use of such gases (for example, by adding or modifying systems, changing operations, or changing the quantity of gases used). The form is to be completed by the responsible person for the activity, reviewed by his or her ESH coordinator, and approved by the cryogenic and oxygen deficiency hazard (ODH) safety program manager. The completed form is to be maintained by the program manager and a copy kept by the responsible person (see [Cryogenic and Oxygen Deficiency Hazard Safety: ODH Safety Review Procedure](https://www-group.slac.stanford.edu/esh/eshmanual/references/cryogenicsProcedODHReview.pdf) [SLAC-I-730-0A06C-001]).

# General Information

|  |  |  |  |
| --- | --- | --- | --- |
| Preparer |  | Location (bldg/rm/area) |  |
| Responsible person |  | Directorate |  |
| Description of system |  | | |
| Gas to be introduced |  | Type of hazard |  |
| Gas source |  | Additional comments  (see back for add. space) |  |
| Attachments | Room floor plan showing location of ODH (required)  Risk assessment (if required, see below) | | |

# Preliminary ODH Calculation

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| --- | --- | --- | --- |
| If source is INSIDE proposed ODH area (e.g., dewar, tank) | | If source is OUTSIDE proposed ODH area (e.g., from a compressor, pump) | |
| Total volume of room a, VR(ft3) = |  | Total volume of room, VR(ft3) = |  |
| Volume of gas at room temperature and pressure, VG(ft3) = |  | Volume of flow rate of gas into room at room temperature and pressure, Q(ft3/h) = |  |
| Calculate oxygen level, 21 (VR – VG) =  VR |  | Calculate oxygen level b, 21 (VR – Q) =  VR |  |
|  |  | Will ventilation be maintained during building power failure?c | Yes  No |

a Room volume is calculated as length x width x ceiling height. Do not reduce room volume to account for room contents (cabinetry, machinery).

b This calculation assumes one air change per hour into the space.

c If there is no positive ventilation during a power failure, further evaluation is required to show that the area has sufficient passive ventilation or other mitigations are in place to assign an ODH 0 classification to the space.

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| If resulting oxygen level is ≥ 19.5% normal ops or ≥ 18% during system upset | Sign form and submit for approval |
| If resulting oxygen level is < 19.5% normal ops or < 18% during system upset | Conduct a risk assessment (see [ODH Safety Review Procedure](https://www-group.slac.stanford.edu/esh/eshmanual/references/cryogenicsProcedODHReview.pdf), Section 2.2) and complete Part 4, “Additional Information”, then sign form and submit for approval |

# Approvals

|  |  |  |  |
| --- | --- | --- | --- |
| Person | Name | Signature | Date |
| Responsible person |  |  |  |
| ESH coordinator |  |  |  |
| Cryogenic and ODH safety program manager |  |  |  |
| ODH classification |  | | |
| Comments |  | | |

# Additional Information for Risk Assessment

|  |  |
| --- | --- |
| To be completed by responsible person. List all that apply and be as specific as possible; indicate whether controls are existing or planned. | |
| **Engineering Controls**  Example:  Mechanical ventilation  Fume hoods  Valves  Critical orifices |  |
| **Administrative Controls**  Example:  Training required  Standard protective measures  Work control documents |  |
| **Attachments**  List all that apply:  Communications  Risk assessment  Hazard analysis |  |

# Additional Comments

|  |  |
| --- | --- |
| **General Information** |  |
| **Approval** |  |
| **Risk Assessment** |  |