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A template and guide for writing a Description of Work



This template provides guidance for writing a Description of Work document for Work Planning and Control. The purpose of a Description of Work document is to communicate to workers the scope of work they are authorized to perform, the main hazards, and the processes and methods used to ensure work is performed safely. The Description of Work is read by each worker who joins the activity so it should be written for their benefit. They are the audience.

- What will help workers understand the scope of what they are authorized to do?
- What will help workers understand the primary risks related to performing the work?
- What will help workers understand the methods and processes used to manage and integrate safety into the work that is performed?
- What will help workers understand the limits of their work (types of tasks / actions that would require a review before performing the work)?

The following Description of Work example is based on a topical format. You are not required to use this format, and can add/remove topics. This document is intended to serve as an example to get you started. This example is written from the perspective of what will be helpful to the workers communication who will join the activity.

Topics used in this Template example are:

1. Introduction	7. Limitations
2. Description of work	8. Work Expectations
3. Processes Employed	9. Hazardous Waste Handling
4. Equipment Used	10. Emergency Procedures
5. Hazardous Materials Used	11. Attachments
6. Training & Qualification	

How to use this template:

- Review the document
- You can copy and paste this into your Activity Description of work, or into an MS Word document to edit.

Assistance:

- You can contact your Division Safety Coordinator and your EHS Liaison to get their input, perspective and support.

-----START OF EXAMPLE DESCRIPTION OF WORK-----

1. Introduction

Purpose: To provide an introduction to workers who will join your activity and review this document.

Example:

This document outlines the scope of work performed in this activity with a focus on safety. Please review this carefully so that we can discuss in person. Please also review the hazards and controls section of this work authorization, and the EHS trainings that are required. You can print a copy of this authorization by using the menu above and selecting "Choose an Action/Printable Version." We will review this together and I will explain how it integrates with our work. I welcome your feedback on this document.

2. Description of Work:

Purpose: To provide a general description of the scope of work performed in the activity. What the work involves at an overview level.

Example:

This activity covers all syntheses operations carried out in pressure vessels such as Parr reactors (aka autoclaves, reaction vessels, etc.). Pressure in these vessels can rise above 150 psi (~10 atm), making this a level 3 (high-risk) hazard activity. For hydrothermal synthesis, the aqueous solution is added to a Parr reactor; the vessel is sealed and then heated to the desired temperature for varying periods of time. The main hazards associated with performing hydrothermal synthesis using a pressure vessel is the use of chemicals, use of ovens, and the potential for over pressurizing the vessel which could cause the vessel to explode or cause the rupture disk to burst. At a high-level this risk is managed by:

- *Following a very thorough worker qualification process*
- *Reviewing and approving all experiments*
- *Using equipment that has been reviewed and approved by EHS*

Each member of this activity needs to have a clear understanding for how to safely perform synthesis operations and their responsibilities in performing all work safely. This document supports that goal.

3. Processes Employed

Purpose: To describe the processes used to achieve the work, and how safety is integrated into these processes. This is not intended to include the detailed work procedures or standard operating procedures (those can be attached or managed separately).

Example:

Hydrothermal Synthesis

For hydrothermal synthesis, the aqueous solution is added to a Parr reactor; the vessel is sealed and then heated to the desired temperature for varying periods of time. Since hydrothermal synthesis involves critical steps throughout the process, each experiment is reviewed for safety and approved by the Activity Lead or PI prior to performing the work. In addition, performance job aids (check sheets) are available. These are used to think through the steps of the process (prior and during performance) to help ensure critical steps are not left out. The worker qualification process (described later) is also instrumental in assuring work is performed safely.

Use of experimental write ups:

- *Workers need to provide an experimental write up that is reviewed by the activity lead or PI before performing work.*
- *This provides specific information about the experiment and the total pressure and serves as a way to ensure that the experiment is well planned and safe.*
- *The experimental write-up template is attached to this activity and available from the PI/Activity Lead.*

Use of work performance procedures and safety documents:

Research support aids are available in the attachments section, in the “Parr safety Reader” and in the Lab. They are used as a way to “self-check” process steps.

- *Start-to-finish process check sheets (self-check guide)*
- *Visual check sheets for inspecting Parr vessels*
- *Visual check sheets for assembling Parr vessels*
- *Communication signs to alert others of work performed*

4. Equipment Used:

Purpose: To provide a list of equipment used as part of the activity. Should include the name of the equipment, purpose, and (as applicable) names of people who are knowledgeable about the safe use of the equipment. Document the hazards of the equipment in the hazards section, or summarize here.

Example:

The following equipment is used as part of this work activity:

<i>Equipment/apparatus</i>	<i>Use/Purpose</i>	<i>Hazards</i>	<i>Contact Person</i>
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<i>Parr reactor vessels *(inventoried) Only use approved inventoried vessels.</i>	<i>Synthesis reactions</i>	<i>Potential vessel failure if over pressurized (explode)</i>	<i>Activity Lead or PI</i>
<i>Drying Ovens</i>	<i>Heating Parr vessels</i>	<i>Overheating, or not shutting off if not functioning as designed.</i>	<i>Activity Lead or PI</i>
<i>Hand tools</i>	<i>For sealing reactor vessels</i>		<i>Activity Lead or PI</i>
<i>Fume Hood</i>	<i>Research tasks that require ventilation</i>		<i>Activity Lead or PI</i>

Equipment inspection:

- *The equipment inspection process is part of on-the-job training (OJT). In addition, there are visual inspection guides for Parr vessels and ovens available in the Lab and attached to this activity. These are used to help evaluate the condition of the equipment prior to use.*
- *If a piece of equipment is not working, or does not appear in good condition, or you have a sense that it is not reliable and therefore needs attention, contact the Activity Lead, PI or safety coordinator and put a sign on it (Out of Order).*
- *There are a number of Parr reactor vessels available that are inventoried and that are approved for use.*
- *DO NOT purchase equipment without the Activity Lead or PI's approval*
- *DO NOT bring equipment from other Labs, campuses, or institutions. All equipment must be reviewed and approved by the activity lead or PI.*

Maintenance:

- *Equipment maintenance is only performed by qualified personnel.*
- *This activity does not qualify you to perform maintenance on equipment.*
- *Contact the Activity Lead or PI when equipment needs servicing.*

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5. Hazardous Materials Used:

Provide a list of the types of materials used as part of this activity. This includes:

Example: The following materials are used as part of this work activity:

- *Chemical*
 - *Nanomaterials*
 - *Sodium Hydroxide and other strong bases*
 - *Titanium isopropoxide*
 - *Titanium oxide or other metal oxides*
 - *Magnesium hydroxide*
 - *Magnesium chloride*
 - *Other precursor materials including oxides, hydroxides, chlorides, nitrates, sulfates, carbonates, acetates, etc.*
 - *Complexing agents such as citric acid or EDTA*
 - *ethylene glycol and other high viscous solvents*
 - *acids such as nitric acid, sulfuric acid, hydrochloric acid, acetic acid*
- *Biological- None*
- *Radiological- None*

NOTE: It is expected that you have a working understanding of the chemicals used and the safety implications.

- *Always consult the Safety Data Sheet to learn the specific hazards and proper handling of the materials you use.*
- *Make sure you understand the chemical reactions and any byproducts produced.*
- *Talk to the Activity Lead about the proper use of any chemicals that you have any questions about or that are new or unfamiliar.*
- *Safety is accomplished by working together. This means that if you have any questions or any uncertainty that you stop and get input from the Activity Lead, or the PI.*
- *This is an expectation I have for everyone on this activity and is for everyone's benefit.*

6. Training and Qualification:

Purpose: Describe any activity-specific training requirements that lead to a worker becoming qualified to perform the work safely. This includes any On the Job Training (OJT) or demonstration of hands-on skills.

Example:

We are a learning institution, and this involves learning how to perform science safely. Working safely is a shared responsibility and it's vital that workers are given direction and practice for performing work safely. This is particularly true with synthesis because the researcher's knowledge, skill and task-level judgement are key to performing the work safely.

The steps that lead to being qualified to perform this work are outlined here and described below:



Training process includes:

1. *Complete Required EHS Trainings (listed in this activity) in the “Training” tab*
2. *Complete the self-study materials followed by discussion with PI or Activity Lead.:*
 - a. *Each worker is provided a “Reader” that provides the essential background information as a starting point. It is attached to this activity and available in-lab. This “Reader” includes Parr safety manual, Parr operating manuals, Parr Assembly overview, pressure temperature relationships, examples of pressure calculations, outline of general safety guidelines, outline of factors that affect safe performance, OJT criteria, and a procedure self-check guide. There is then a discussion with the activity lead about these materials.*
3. *On-the-job Training*
 - a. *Each worker has on-the-job training specific to their work. The framework for OJT is:*
 - i. *Demonstrate: The OJT Trainer demonstrates and explains the process – highlighting critical steps – explaining requirements – sharing techniques.*
 - ii. *Practice: The learner then undergoes guided and supervised practice until they are comfortable and confident in performing the work.*
 - iii. *Performance: When ready, the learner is asked to perform the operation start-to-finish without support.*

- b. *When the OJT trainer is confident that the worker can perform the work safely and effectively they are then authorized to work without need of direct supervision.*
- c. *An OJT check sheet (also in the Reader) and attached, has the performance criteria. Workers can review this.*

The activity lead and PI determine when a worker is qualified and authorized to work without supervision.

7. Limitations:

Purpose: Describe any work limitations associated with this activity. This can include identifying tasks/procedures where staff can only work while accompanied, restrictions on use of equipment, or work during certain times/days, room access, etc.

Section can also indicate limits that require review that may be particularly important with new experiments or when experiment parameters change. Can indicate specific and general limits such as: pressure limits, to consult with the activity lead before substituting materials, increasing volumes (scaling up), or increasing temperatures or heating durations, or other conditions where you want the worker to stop and talk before making change.

Example:

All synthesis work performed in a Parr vessel needs to be reviewed before it is performed. As mentioned previously this activity uses an experimental work sheet that is signed off by the Activity Lead or PI.

Applicable limits to understand:

- *Do not change chemicals or materials without review and approval*
- *Do not increase volumes without review and approval*
- *Do not increase temperatures or duration of heating without review and approval*
- *Only use approved vessels (do not purchase vessels without permission) and do not bring vessels from other institutions/campuses or departments*

8. Work Expectations

Purpose: Communicate your expectations for the performance of safe work

The following practices are broad expectations that must be followed on a daily basis:

1. *Make sure the chemicals, tools, machines and equipment are appropriate for the task.*
2. *Check laboratory equipment prior to starting work, and make sure it is in good condition and functioning properly.*
3. *Perform work within the parameters defined by this Work Activity. This includes established pressures, temperatures, quantities, and set points.*
4. *Ensure all safety controls required by this Work Activity are available and in use. This includes adequate personal protective equipment and engineering controls.*
5. *Immediately report any equipment, machine or tool failures, deviations from normal operations, or other deficiencies to the Activity Lead or Principal Investigator.*
6. *Decommission defective equipment immediately if the failure or deficiency may affect its safe operation. Attach a “DEFECTIVE DO NOT USE” tag to prevent use until repaired.*
7. *Always practice good housekeeping and properly store unused equipment and chemicals. All containers will be labeled as to their contents and hazards. All chemicals will be entered into the Chemical Management System. Liquid chemical containers will be kept in photo trays or other secondary containment. SDSs for the chemicals are accessible through LBNL's Chemical Hygiene and Safety Plan.*

9. Hazardous Waste Handling:

Purpose: Describe any **special** hazardous waste handling or storage requirements.

NOTE: If no special information / process is used this may not be necessary.

10. Emergency Procedures:

Purpose: To describe any special emergency procedures that are applicable to the work performed in the activity. If there are response procedures that staff need to understand and be able to perform identify them here

Example:

Emergency equipment that is relevant to this activity is:

- *Eyewash and shower for chemical exposure*
 - *Workers need to know locations and be instructed in their use. This is managed as part of Lab orientation.*
- *Chemical spill clean-up procedures*

- *Workers need to know locations of spill kits, be able to select the appropriate spill kit based on the materials they use, be able to use the spill kit (and) know when not to clean up a spill.*
- *This is managed in Lab orientation*
- *First Aid*
 - *Workers need to know the location of First Aid materials, and how to report injuries as well as the contact information for emergencies and non-life-threatening events.*
 - *EHS Training and Lab orientation to show where the Emergency Guide is and how to use it.*
- *Fire Extinguisher use*
 - *Type ABC and Type D fire extinguishers are located in the hallway outside the lab area. In the event of a fire, immediately alert personnel in the area, evacuate, activate the nearest fire alarm, and notify the fire department by calling **X911**.*
 - *Authorized personnel may attempt to extinguish the fire if it is very small and they have received fire extinguisher training. Be aware that the grignard reagents will react violently with water. All personnel who use a fire extinguisher must receive EHS0520 and EHS0522 “Fire Extinguisher” training.*
- *Equipment shutdown*
 - *This activity does not have any procedure for shutting down equipment in response to an emergency condition (expected power outage, etc).*

11. Inspection/Maintenance:

Purpose: (As needed) Describe any inspection or maintenance requirements associated with equipment or materials associated with the activity. For instance, indicate who can perform maintenance and whether a vendor is used for equipment servicing.

Example:

Only qualified staff are qualified to maintain equipment. In most cases maintenance is performed by qualified outside vendors. Workers on this activity are not qualified and authorized to perform maintenance.

Parr Reactor Vessels:

- *Inspection and operation process is part of OJT.*

- *An inspection and maintenance job-aid is used and available in the Lab (where the Parr vessels are stored). This document outlines the inspection and use guidelines so they are available at the time of need/use.*

Ovens Furnaces:

- *Inspection and operation process is part of OJT.*
- *An inspection and maintenance job-aid is used and available in the Lab (where the Parr vessels are stored). This document outlines the inspection and use guidelines so they are available at the time of need/use.*

Fume hoods:

You are responsible for the following:

- *Checking the airflow indicator prior to each use to ensure adequate exhaust is being provided. Average face velocity should be maintained at or above 100 feet per minute.*
- *Minimizing storage inside the hood and placing containers at least 6 inches from the hood face.*
- *Keeping exhaust slots at the back of the hood clear.*
- *Keeping the hood sash closed when not in use.*
- *All fume hoods are checked and calibrated at least every two years. A survey sticker is affixed to document. If a fume hood is in alarm or not operating properly, contact Facilities at X6274 for assistance.*

12. Attachments:

Purpose: To list any standard operating procedures, videos, training materials, equipment manuals, etc. related to the activity.

Example:

- *The Parr safety "Reader" is attached. Used to present safety related documents, training materials and OJT information that workers read and discuss with Activity Lead prior to OJT. Includes Par reactor safety document and Parr manuals as well as other safety related documents.*
- *Link to Safety Data Sheet (SDS) database:
http://www2.lbl.gov/ehs/pub3000/CH45/CH45_MSDS.html*