

Chapter 296-71 WAC
**REFINERY WORKER TRAINING AND CERTIFICATION IN HIGH
HAZARD FACILITIES**

Appendix A: Training course content – Nonmandatory

Fundamentals of Petroleum Refining (4-hours)	
<p>Fundamentals of Petroleum Refining will explore the critical role refining plays in unleashing the potential of a barrel of crude oil and turning it into the specially formulated products that we rely on every day. These products include gasoline, agricultural chemicals, heating oil, plastics, and even prescription medicines. The training will also cover basic refining streams and unit configurations. Also covered will be hazards inherent to high hazard facilities and common emergency response processes. A section of the training will explain refining culture as it may differ from other industry sectors. An introduction to common refining terminology will be covered.</p> <p>A major objective of this course is to address:</p> <ul style="list-style-type: none"> • <i>Fundamentals of the petroleum refining industry</i> • <i>Crude oil and its properties</i> • <i>Classes of refinery processes and refinery configurations</i> • <i>Properties of the refinery-produced streams</i> • <i>Refinery hazards and emergency response procedures</i> <p>Suggested text and training material for instructors: Fundamentals of Petroleum Refining, Authors: Mohamed A. Fahim, Taher A. Alsahhaf, Amal Sayed Elkilani</p>	
Refining Industry Safety Concepts/ Refinery Safety Overview (8-hours) This course addresses the basic safety principles associated with working in high hazard facilities. The program provides an awareness level orientation of the following elements:	Applicable WAC or Best Practices recommended as training resources
Overview/awareness of Personal Requirements for Refineries	Transportation Worker Identification Credential Drug Test Respirator Fit Test WAC 296-67-029 Contractors WAC 296-67-025 Training Refinery Site Specific Training
Hazard communication	Chapter 296-901WAC
Emergency preparation and response	Chapter 296-824 WAC, Emergency response; Chapter 296-24-567 WAC, Employee emergency plans and fire prevention plans
Exit routes and employee alarm systems	Chapter 296-800-310 WAC
Fire brigades	Chapter 296-811 WAC Understanding how refinery fire brigades work, including rescue operations, confined space entry protocols, fire suppression techniques, use of testing instruments, etc. May include facility-specific information.

Fire prevention and protection	Chapter 296-24-567 WAC (general industry); Chapter 296-155-250 WAC (construction industry) Basic overview on fire prevention, ignition sources, gas monitoring before hot work, etc. May include facility-specific information.
Toxicology	Asbestos Awareness training Chapter 296-155-176 WAC, Lead in Construction Chapter 296-849 WAC, Benzene Chapter 296-840 WAC, Silica Best Practice Hydrogen Sulfide (H2S) Best Practice Hydrofluoric Acid Best Practice Apxhixiants SDS's, CSB videos, Dept. of Labor & Industries training kits, etc. recommended as training resources.
Personal protective equipment (PPE) for refinery work	Chapter 296-800-160 WAC (general industry); Chapter 296-155-200 WAC (construction industry) Flame Resistant Clothing Hard Hat Eye Protection Appropriate Footwear Hearing Protection Fall Protection Personal Cleanliness Protective Clothing Contaminated Clothing
Respiratory protection	Chapter 296-842 WAC
Hearing conservation	Chapter 296-817 WAC
Energy Control (Lockout/Tagout)	Chapter 296-803 WAC (general industry); Chapter 296-155-429 WAC (construction industry)
Confined space	Chapter 296-809 WAC (general industry); Chapter 296-155-203 WAC (construction industry)
Heat related illness	Chapter 296-62-095 WAC
Refinery safe work practices	Best practice – general safety in a refinery
Process safety management for refineries	Chapter 296-67 WAC

Craft-Specific Safety Training (8-hours)	Applicable WAC or Best Practices recommended as training resources
<p>Participants will learn the specific work performed by various trades working in the refinery. Working safely alongside other crafts and recognizing the similar and dissimilar risks associated with each craft is the focus of this course. Participants will also learn about interdependency and relationships between the crafts, stacked work, dissimilar trades working near each other, dissimilar risks associated with trade types (i.e. electrical energy, product energy, radiation, potential falling objects etc.) job sequencing, and barricading.</p> <p>Craft Specific Safety Training must cover individual craft hazards in a minimum of three categories: Hard trades: Boilermaker, Pipefitting, Welders, Electricians, etc. Soft Trades: Painting, Scaffold building, Insulation, Carpentry, etc. Support Crafts: Cranes, Inspection, Hydroblasting, Vac Trucks, Safety Attendant, etc.</p>	
<p>Hot work Multiple trades are involved in hot work operations. Trades working in other operations on the location at the same time could be impacted from the hazards associated with hot work.</p>	<p>Chapter 296-24-695 WAC, Fire prevention and protection (general industry); Chapter 296-155-250 WAC, Fire prevention and protection (construction industry) Understanding what hot work is and how to perform craft work safely; awareness of ignition sources such as welding, and performing dissimilar work around such areas Hot work permits are specific to each facility and facility-specific information may be included in training</p>
<p>Working at heights The work of multiple trades may require working at heights and supporting working at heights. Trades working in areas where overhead work is occurring at the same time could be impacted from hazards such as falling objects.</p>	<p>Chapter 296-874 WAC, Scaffolds; Chapter 296-880 WAC, Unified safety standards for fall protection Recognizing where overhead work is occurring; understanding any hazards associated with craft work in such areas.</p>
<p>Electrical</p>	<p>Chapter 296-24-957 WAC (general industry); Chapter 296-155-426 WAC (construction industry) Understanding electric shock and electrocution Recognizing potential hazards around work involving electricity Maintaining clearances around panels Using proper protective devices Eliminating access to exposed energized parts How electricians work relates to other work performed in the refinery</p>
<p>Pipefitting</p>	<p>Chapter 296-155 WAC: Part D Fire protection and prevention; Part F-1, rigging other than with the use of a crane (winch/tugger, chainfall, etc.); Part G Tools - Hand and power; Part H Welding and cutting; Part L, rigging and signaling with cranes How pipefitters work relates to other work performed in the refinery.</p>

Crane and material handling	Chapter 296-155 WAC: Part L, rigging and signaling with cranes; Part F-1, rigging other than with the use of a crane (winch/tugger, chainfall, etc.) Chapter 296-863 WAC, Forklifts and other Powered Industrial Trucks How equipment operating engineers work relates to other work performed in the refinery
Finishing trades – painters and drywall	Chapter 296-155 WAC How finishing trades work relates to other work performed in the refinery.
Cement masons	Chapter 296-155 WAC How cement masons work relates to other work performed in the refinery.
Construction Laborers	Chapter 296-155 WAC How construction laborers work relates to other work performed in the refinery.
Carpenters Scaffold Erectors	Chapter 296-874 WAC, Scaffold Chapter 296-880 WAC, Unified safety standards for fall protection How carpenter scaffold erectors work relates to other work performed in the refinery.
Ironworkers, boilermakers, steelworkers	Chapter 296-155 WAC How ironworkers, boilermakers, and steelworkers work relates to other work performed in the refinery.
Asbestos workers	Chapter 296-155 WAC; Chapter 296-65 WAC Asbestos removal and encapsulation How asbestos workers work relates to other work performed in the refinery.