

# DACUM Research Chart for Biodiesel Technologist

## DACUM Panel

Lee Munoz  
Biodiesel Plant  
Supervisor/Operator  
Imperial Western Products

Rudi Wiedemann  
President/CEO  
Biodiesel Solutions, Inc.

Curtis Wright  
Division Manager  
Imperial Western Products

## DACUM Facilitators

Peter Davis  
Dave Esmaili  
Sam Stevenson  
Janie Thomas, Team Leader

## Sponsored by



CALIFORNIA  
COMMUNITY  
COLLEGES

**ECONOMIC &  
WORKFORCE  
DEVELOPMENT  
PROGRAM**



## Produced by



**CENTER ON EDUCATION  
AND TRAINING FOR EMPLOYMENT**  
COLLEGE OF EDUCATION  
THE OHIO STATE UNIVERSITY  
1900 Kenny Road • Columbus, Ohio 43210-1090

**July 21-22, 2005**

# DACUM Research Chart for Biodiesel Technologist

Duties		Tasks				
A	Manage Production Inventory	A-1 Measure production inventory	A-2 Record inventory data	A-3 Collect production records	A-4 Enter production inventory data	A-5 Reconcile inventory levels
		B-1 Review production status	B-2 Determine batch recipe	B-3 Set production process parameters	B-4 Check intermediate production material quality	B-5 Transfer production materials
B	Manage Biodiesel Production Process	C-1 Review sales orders	C-2 Perform final Q/C process	C-3 Package product for delivery	C-4 Arrange product transport	C-5 Load product shipment
		D-1 Complete safety training	D-2 Wear personal protective equipment	D-3 Clean work area	D-4 Adhere to lockout/tagout	D-5 Identify hazardous materials
C	Perform Order Fulfillment	D-13 Conduct work environment safety tests (e.g., temperature, gas detector, pH)				
		E-1 Collect production process samples	E-2 Test production process sample	E-3 Document production process results	E-4 Report production process test results	E-5 Reconcile test results with outside lab
D	Maintain Safe Work Environment	F-1 Check equipment maintenance activities	F-2 Prioritize equipment maintenance activities	F-3 Conduct biodiesel production equipment inspection		F-4 Organize maintenance tools & supplies
		F-13 Service electric power services	F-14 Service rotating production machines	F-15 Service production diaphragm pumps	F-16 Inspect production equipment tanks	F-17 Clean production equipment tanks
E	Maintain Biodiesel Production Quality Program	G-1 Quality to perform each production operation	G-2 Quality to maintain each production operation	G-3 Qualify to train other BDTs	G-4 Complete outside coursework	G-5 Participate in industry events
		G-1 Quality to perform each production operation				
F	Manage Biodiesel Production Maintenance Program					
G	Continue Career Development					

July 21-22, 2005

A-6 Determine production priorities	A-7 Generate inventory/production report	A-8 Prioritize production stock usage	A-9 Order production materials	A-10 Receive incoming materials	A-11 Perform incoming quality control process	A-12 Scrap rejected production materials
B-6 Implement backup production system	B-7 Control process parameters	B-8 Rework out of spec production materials	B-9 Dispose of production waste product materials	B-10 Transport production material containers	B-11 Store production material containers	B-12 Record production data
C-6 Complete product order paperwork						
D-6 Transport hazardous materials	D-7 Store hazardous materials	D-8 Dispose of hazardous materials	D-9 Report unsafe work conditions	D-10 Correct unsafe work conditions	D-11 Update safety records	D-12 Service safety equipment
E-6 Calibrate lab test instruments	E-7 Restock lab test consumables					
F-5 Service biodiesel production tools	F-7 Service cooling towers	F-8 Service air compressors	F-9 Service steam system	F-10 Service filter & traps	F-11 Service heat exchangers	F-12 Service production equipment seals & gaskets
F-18 Repair production equipment leaks	F-19 Restock maintenance supplies	F-20 Conduct production equipment pressure tests	F-21 Conduct production equipment materials thickness test		F-22 Conduct production pump performance test	F-23 Document equipment maintenance work

---

## **General Knowledge and Skills**

Basic math  
Problem solving  
Safety standards  
Biodiesel chemistry and chemical process  
Troubleshoot  
Use of instrumentation and controls  
Use of safety equipment  
Communications  
Understanding hazardous materials  
Report writing  
Basic lab procedures  
Operate heavy equipment  
Leadership skills  
Writing procedures

## **Tools, Equipment, Supplies and Materials**

Pilot plant  
Pipe wrench  
Channel locks  
Screwdriver  
Pliers  
Wire cutters  
Meters  
Temperature probe  
Chemistry lab instruments  
pH meters  
Chemical lab ware  
GC's  
Chemical test instruments  
Karl Fisher instruments  
Flash testers  
Zone liquid samplers  
General safety equipment (respirators)  
Cam lock connectors  
Portable connectors  
Hoses

## **Worker Behaviors**

Meticulous  
Punctual  
Consistent  
Level headed  
Understanding  
Multi-tasking  
A role model  
Trustworthy  
Honest  
Mechanically inclined  
Careful  
Never stop learning

## **Future Trends and Concerns**

New process  
New feedstock  
New equipment  
New applications  
Market economic development  
Increase regulatory issues  
Environmental issues  
Safety issues  
Consumer issue  
Industry expansion  
Geo-political shift  
World economic shift