



Vaccine Storage and Handling Toolkit

Resources

March 29, 2024



REFERENCE: Purpose-Built Vaccine Storage Units

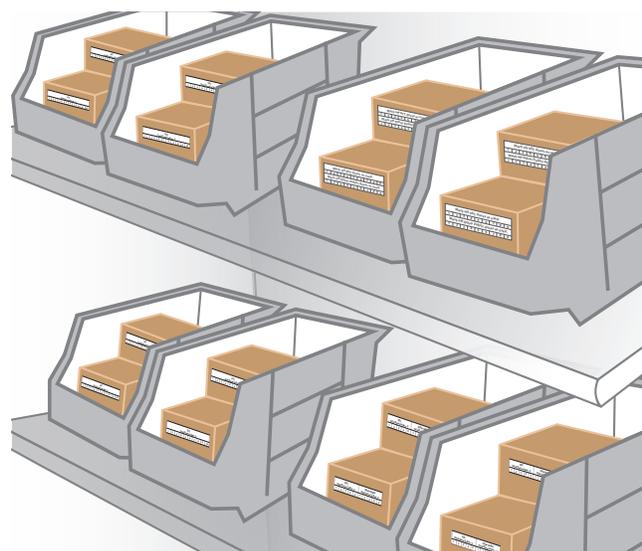
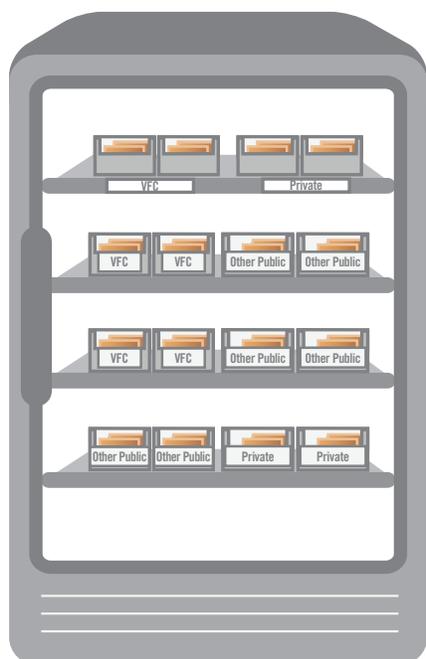
Numerous vaccine storage units have entered the market that are designed specifically for the storage of vaccines. These units can take many physical forms. Some look like traditional stand-alone units, while others can take the form of dispensing or vending units, either with or without doors. Although these units may be similar to pharmaceutical-grade or medical-grade units, they are unique in that they are designed and tested to keep vaccines in appropriate storage conditions. If you are a VFC provider, your immunization program determines which purpose-built units meet VFC program requirements. Always check with your immunization program before purchasing any unit that will be used to store VFC vaccines. Features and considerations related to these types of units include the following:

Temperature Monitoring

- Many purpose-built units have multiple temperature probes or sensors. It is important that these probes or sensors have current Certificates of Calibration.
- Many of the purpose-built closed or doorless units may utilize air sensors (non-buffered probes). Since these units have very limited exposure to ambient air, the use of a buffered probe is not essential.
- Many purpose-built units will have built-in digital data loggers with electronic interfaces that will allow you to track the continuous temperatures and/or provide min/max temperatures. If you are a VFC provider, always check to make sure that these satisfy the VFC program data logger requirements.

Vaccine Storage

- Many purpose-built units have undergone testing and temperature mapping so that the probe is in the most appropriate location.
- Although purpose-built units can have multiple temperature probes, a backup DDL is still needed for transport to a backup facility in an emergency.
- Many purpose-built units do not need water bottles to serve as thermal ballast.



VFC vaccine management

- » Purpose-built units must have the ability to allow the user to separate public and private vaccine stock physically or virtually.
- » If stock is separated virtually, an inventory printout¹ must be accessible upon request.
- » If unable to physically remove expired vaccine from a purpose-built unit immediately, the unit must be able to make expired vaccine inaccessible.

¹The inventory printout should be used to answer storage and handling and inventory sections of the site visit reviewers guide.

WORKSHEET: Vaccine Storage and Handling SOPs

Complete the following checklist and forms and store this information in an easily accessible area near the vaccine storage unit.

CHECKLIST OF GENERAL INFORMATION

- » Up-to-date contact information
 - Primary vaccine coordinator
 - Alternate vaccine coordinator
 - Additional staff to assist in emergencies
 - Immunization program
 - Vaccine manufacturers
 - Refrigerator and freezer maintenance and repair companies
 - Temperature monitoring device (TMD) companies
 - Utility/power company
 - Vaccine storage unit alarm company (if applicable)
 - Generator repair company (if applicable)
 - Sources for qualified containers and packouts
- » Descriptions of the roles and responsibilities of the primary and alternate vaccine coordinators
- » Information for each storage unit, including serial number, links to equipment websites, installation dates, and routine maintenance and repair records
- » Samples of all vaccine-related forms used in your facility
- » Protocols for staff education and training

CHECKLIST FOR ROUTINE STORAGE AND HANDLING

- » Protocols for:
 - Ordering and accepting vaccine deliveries
 - Unpacking deliveries
 - Managing inventory
 - Storing each vaccine and diluent
 - Placing vaccines and diluents in storage units
 - Handling vaccines prior to administration
- Disposing of vaccines and supplies
- Monitoring storage unit and temperature
- Maintaining storage equipment and TMDs
- Responding to storage and handling problems
- Transporting vaccines to off-site/satellite facilities

CHECKLIST FOR EMERGENCY VACCINE STORAGE, HANDLING, AND TRANSPORT

- » All contact information in Checklist for General Information as well as up-to-date contact information for:
 - Alternative vaccine storage facility (one or more)
 - Transportation of vaccines
- » Vaccine storage unit specifications (type, brand, model number, serial number)
- » Diagram of facility showing important elements, including doors, flashlights, packing materials, batteries, circuit breakers
- » Keep a copy of emergency SOPs with emergency supplies and at multiple off-site locations such as homes of vaccine coordinator and alternate coordinator and with building manager, security staff, and alternative storage facility.
- » Protocols for:
 - Monitoring vaccines during a power outage
 - Packing vaccines and diluents for emergency transport
 - Transporting vaccines to and from an alternative vaccine storage facility
 - Assessing whether vaccine can be used after an emergency
 - Accessing your building and facility after hours

WORKSHEET: Vaccine Storage and Handling SOPs

Store emergency information with emergency supplies.

STAFF CONTACT LIST

Name	Title	Telephone Numbers home/cell/other	E-mail Address
	Primary Vaccine Coordinator		
	Alternate Vaccine Coordinator		

EMERGENCY STAFF CONTACT LIST

Name	Title	Telephone Numbers home/cell/other	E-mail Address
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

List contacts in order of preference. Determine whether all or certain persons on the list should be contacted or if the first person reached is sufficient.

WORKSHEET: Vaccine Storage and Handling SOPs

GENERAL RESOURCES CONTACT LIST

Resources	Contact Person Name/Title	Telephone Numbers home/cell/other	E-mail Address
Local Health Department Immunization Program			
State Health Department Immunization Program			
Vaccine Manufacturers			
Refrigerator Repair Company			
Freezer Repair Company			
Utility/Power Company			
Temperature Monitoring Device Company			
Vaccine Storage Unit Alarm Company (if applicable)			
Generator Repair Company (if applicable)			

ALTERNATIVE VACCINE STORAGE FACILITIES

Alternative Vaccine Storage Facility Name/Address	Contact Person Name/Title	Telephone Numbers home/cell/other	E-mail Address
1.			
2.			
3.			
4.			

TRANSPORTATION TO ALTERNATIVE VACCINE STORAGE FACILITIES

Emergency Resources Name/Address	Contact Person Name/Title	Telephone Numbers home/cell/other	E-mail Address
Refrigeration Company			
Refrigeration Company (alternative)			
Private Vehicle			
Private Vehicle (alternative)			

WORKSHEET: Vaccine Storage and Handling SOPs

PACKING MATERIAL SUPPLIERS CONTACT LIST

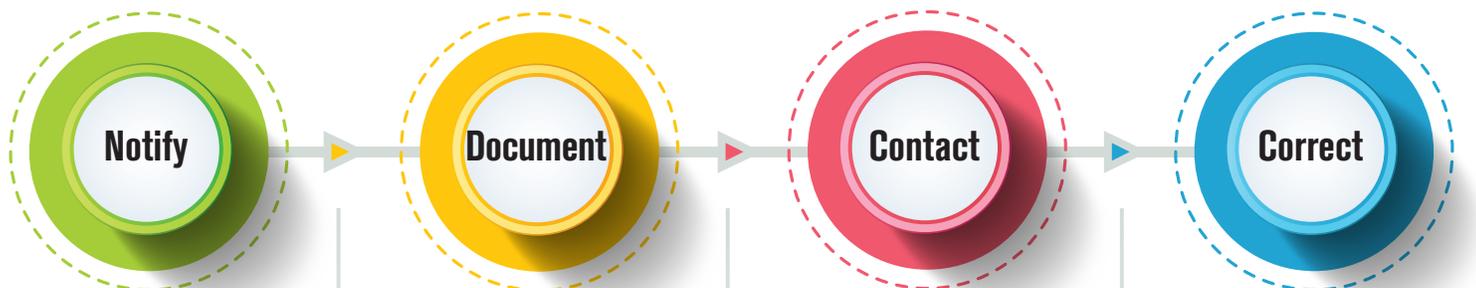
Emergency Resources	Company Name	Contact Person Name/Title	Telephone Numbers home/cell/other	E-mail Address
Portable vaccine refrigerator/freezer units				
Qualified containers and packout materials				
Qualified containers and packout materials (alternative)				
Packing materials				
Packing materials (alternative)				

VACCINE STORAGE UNIT SPECIFICATIONS

Type of Unit (Refrigerator or Freezer)	Brand	Model Number	Serial Number
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Handling a Temperature Excursion in Your Vaccine Storage Unit

Any temperature reading outside ranges recommended in the manufacturers' package inserts is considered a temperature excursion. Identify temperature excursions quickly and take immediate action to correct them. This can prevent vaccine waste and the potential need to revaccinate patients.



- » Notify the primary or alternate vaccine coordinator immediately or report the problem to a supervisor.
- » Notify staff by labeling exposed vaccines, "DO NOT USE," and placing them in a separate container apart from other vaccines in the storage unit. Do not discard these vaccines.

- » Document details of the temperature excursion:

- Date and time
- Storage unit temperature (including minimum/maximum temperatures during the time of the event, if available)
- Room temperature, if available
- Name of the person completing the report
- General description of the event (i.e., what happened)
- If using a digital data logger (DDL), determine the length of time vaccine may have been affected
- Inventory of affected vaccines
- List of items in the unit other than vaccines (including water bottles)
- Any problems with the storage unit and/or affected vaccines before the event
- Other relevant information

- » **Contact your immunization program and/or vaccine manufacturer(s) for guidance per your standard operating procedures (SOPs).**

- » Be prepared to provide the immunization program or manufacturer with documentation and DDL data so they can offer you the best guidance.

Contact manufacturer for excursions:

Astra Zeneca	Phone: 1-800-236-9933
Dynavax	Phone: 1-844-375-4728
Grifols	Phone: 1-800-520-2807
GSK	Phone: 1-888-825-5249 Stability Tool: gskusmedicalaffairs.com/stability-calculator.html
Merck	Phone: 1-800-672-6372 Website tool: cdshipping.merck.com Stability Tool: www.merckmedicalportal.com/s/temperature-stability-calculator
Moderna	Phone: 1-866-663-3762 Stability Tool: tools.modernamedinfo.com/en-US/excursion/introduction-landing-page
Pfizer	Phone: 1-800-438-1985 Stability Tool: www.pfizermedicalinformation.com/en-us/stability-calculator?product=PREVNAR%C2%AE%2013-valent%7C%20pneumococcal%2013-valent%20conjugate%20vaccine%20-%20diphtheria%20CRM197%20protein
Sanofi Pasteur	Phone: 1-800-822-2463 Stability Tool: intdemo-sanofi.cs109.force.com/s/stability-calculator?language=en_US&CN=US
Seqirus	Phone: 1-855-358-8966

- » If the temperature alarm goes off repeatedly, do not disconnect the alarm until you have determined and addressed the cause.
- » Check the basics, including:
 - Power supply
 - Unit door(s)
 - Thermostat settings
- » If the excursion was the result of a temperature fluctuation, refer to the section, "Vaccine Storage and Temperature Monitoring Equipment," in CDC's *Vaccine Storage and Handling Toolkit* for detailed guidance on adjusting storage unit temperature to the appropriate range.
- » If you believe the storage unit has failed, implement your emergency vaccine storage and handling SOPs. Never allow vaccines to remain in a nonfunctioning unit following a temperature excursion.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Fahrenheit to Celsius and Celsius to Fahrenheit Conversion

°F	°C	°F	°C	°F	°C
-22	-30	21	-6.1	64	17.8
-21	-29.4	22	-5.6	65	18.3
-20	-28.9	23	-5	66	18.9
-19	-28.3	24	-4.4	67	19.4
-18	-27.8	25	-3.9	68	20
-17	-27.2	26	-3.3	69	20.6
-16	-26.7	27	-2.8	70	21.1
-15	-26.1	28	-2.2	71	21.7
-14	-25.6	29	-1.7	72	22.2
-13	-25	30	-1.1	73	22.8
-12	-24.4	31	-0.6	74	23.3
-11	-23.9	32	0	75	23.9
-10	-23.3	33	0.6	76	24.4
-9	-22.8	34	1.1	77	25
-8	-22.2	35	1.7	78	25.6
-7	-21.7	36	2.2	79	26.1
-6	-21.1	37	2.8	80	26.7
-5	-20.6	38	3.3	81	27.2
-4	-20	39	3.9	82	27.8
-3	-19.4	40	4.4	83	28.3
-2	-18.9	41	5	84	28.9
-1	-18.3	42	5.6	85	29.4
0	-17.8	43	6.1	86	30
1	-17.2	44	6.7	87	30.6
2	-16.7	45	7.2	88	31.1
3	-16.1	46	7.8	89	31.7
4	-15.6	47	8.3	90	32.2
5	-15	48	8.9	91	32.8
6	-14.4	49	9.4	92	33.3
7	-13.9	50	10	93	33.9
8	-13.3	51	10.6	94	34.4
9	-12.8	52	11.1	95	35
10	-12.2	53	11.7	96	35.6
11	-11.7	54	12.2	97	36.1
12	-11.1	55	12.8	98	36.7
13	-10.6	56	13.3	99	37.2
14	-10	57	13.9	100	37.8
15	-9.4	58	14.4	101	38.3
16	-8.9	59	15	102	38.9
17	-8.3	60	15.6	103	39.4
18	-7.8	61	16.1	104	40
19	-7.2	62	16.7		
20	-6.7	63	17.2		

°C	°F	°C	°F
-30	-22	13	55.4
-29	-20.2	14	57.2
-28	-18.4	15	59
-27	-16.6	16	60.8
-26	-14.8	17	62.6
-25	-13	18	64.4
-24	-11.2	19	66.2
-23	-9.4	20	68
-22	-7.6	21	69.8
-21	-5.8	22	71.6
-20	-4	23	73.4
-19	-2.2	24	75.2
-18	-0.4	25	77
-17	1.4	26	78.8
-16	3.2	27	80.6
-15	5	28	82.4
-14	6.8	29	84.2
-13	8.6	30	86
-12	10.4	31	87.8
-11	12.2	32	89.6
-10	14	33	91.4
-9	15.8	34	93.2
-8	17.6	35	95
-7	19.4	36	96.8
-6	21.2	37	98.6
-5	23	38	100.4
-4	24.8	39	102.2
-3	26.6	40	104
-2	28.4		
-1	30.2		
0	32		
1	33.8		
2	35.6		
3	37.4		
4	39.2		
5	41		
6	42.8		
7	44.6		
8	46.4		
9	48.2		
10	50		
11	51.8		
12	53.6		

HANDLE WITH CARE: Protect Your Vaccine | Protect Your Patients

REFRIGERATOR

Store vaccines between

2°C and 8°C
(36°F and 46°F)

FREEZER

Store vaccines between

-50°C and -15°C
(-58°F and +5°F)

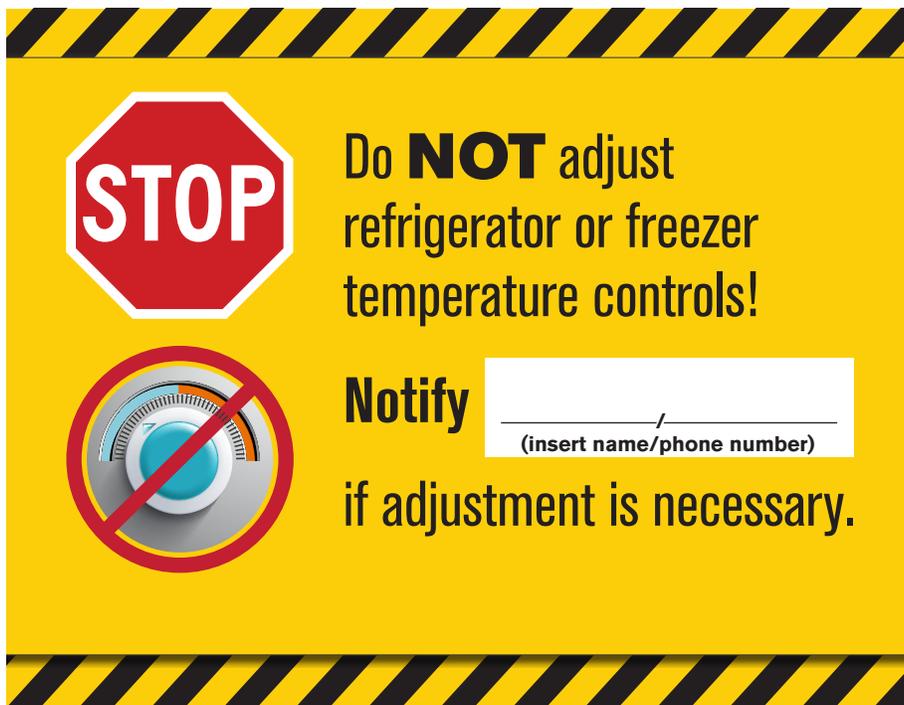
Ultra cold freezer

-60°C and -90°C
(-76°F and -130°F)

- » Keep your storage units and vaccines within the appropriate temperature ranges.
- » Check and record storage unit min/max temperatures at start of each workday. If your device does not display min/max temperatures, then check and record current temperature a minimum of 2 times (at start and end of workday). Also check current temperature before accessing and administering vaccine.

- » Take immediate action if temperatures are out of range.
- » Keep vaccines in their original packages.
- » Many vaccines should be protected from light (consult manufacturer's product information).
- » Check expiration dates and rotate your vaccine stock to keep most recent expiration dates at the front.

WARNING LABELS: Do Not Adjust Refrigerator Controls



STOP

Do **NOT** adjust refrigerator or freezer temperature controls!

Notify _____ / _____
(insert name/phone number)

if adjustment is necessary.



ALTO

¡ **NO** cambie la temperatura del refrigerador/congelador!

Comuníquese con _____
(inserte nombre y número de teléfono aquí)

si hay necesidad de cambiar la temperatura.

WARNING LABELS: Do Not Adjust Freezer Controls

STOP

Do **NOT** adjust **FREEZER** temperature controls!

Notify /
(insert name/phone number)

if adjustment is necessary.

This warning label features a blue background with black and blue diagonal hazard stripes at the top and bottom. On the left, there is a red octagonal stop sign with the word "STOP" in white, and below it, a circular icon of a freezer dial with a red prohibition sign over it. The text is in a bold, sans-serif font.

ALTO

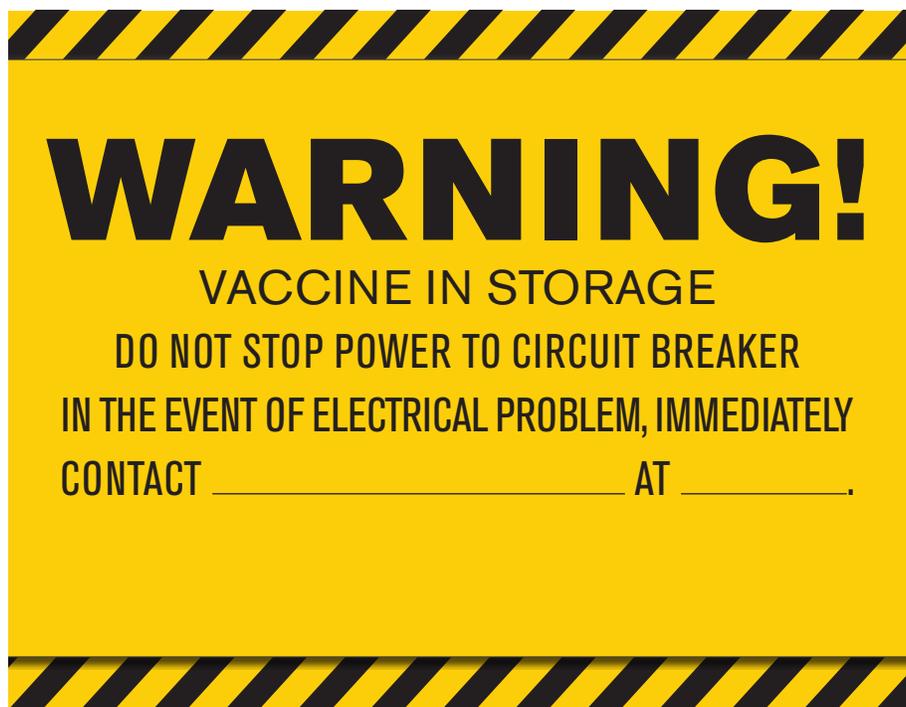
¡ **NO** cambie la temperatura del **CONGELATOR!**

Comuníquese con /
(inserte nombre y número de teléfono aquí)

si hay necesidad de cambiar la temperatura.

This warning label features a blue background with black and blue diagonal hazard stripes at the top and bottom. On the left, there is a red octagonal stop sign with the word "ALTO" in white, and below it, a circular icon of a freezer dial with a red prohibition sign over it. The text is in a bold, sans-serif font.

WARNING LABELS: Warning! Do Not Stop Power to Circuit Breaker



WARNING LABELS: Warning! Do Not Unplug Refrigerator

WARNING!
DO NOT UNPLUG THE REFRIGERATOR
OR BREAK CIRCUIT.

VACCINE IN STORAGE.
IN THE EVENT OF ELECTRICAL PROBLEM, IMMEDIATELY
CONTACT: _____
 (insert name/phone number)



¡AVISO!
NO DESCONECTE EL REFRIGERADOR
NI CORTE EL CIRCUITO.

¡CONTIENE VACUNAS!
SI HAY UN PROBLEMA CON LA ELECTRICIDAD,
COMUNIQUESE INMEDIATAMENTE CON:

 (inserte nombre y número de teléfono aquí)



WARNING LABELS: Warning! Do Not Unplug Freezer

WARNING!

DO **NOT** UNPLUG THE **FREEZER** OR
BREAK CIRCUIT.

VACCINE IN STORAGE.

IN THE EVENT OF ELECTRICAL PROBLEM, IMMEDIATELY
CONTACT: _____
(insert name/phone number)



¡AVISO!

NO DESCONECTE EL CONGELADOR
NI CORTE EL CIRCUITO.

¡CONTIENE VACUNAS!

SI HAY UN PROBLEMA CON LA ELECTRICIDAD,
COMUNIQUESE INMEDIATAMENTE CON:

(inserte nombre y número de teléfono aquí)



TRANSPORT LABELS: Refrigerate/Freeze Upon Arrival



TRANSPORT LABELS: Open Immediately: Refrigerate/Freeze Upon Receipt

TRANSPORT LABELS: Fragile: Handle with Care



