



राज्य स्वास्थ्य समिति, बिहार



राजेश कुमार, बि०प्र०से०
प्रशासी पदाधिकारी-सह-प्रभारी, प्रोक्तोरमेट

पत्रांक: SHSB/PM/591/2021/.5451....

सेवा में,

सभी सिविल सर्जन, बिहार।

सभी प्राचार्य/अधीक्षक, चिकित्सा महाविद्यालय अस्पताल।

निदेशक, इंदिरा गाँधी आयुर्विज्ञान संस्थान, पटना

निदेशक, लोक नायक जय प्रकाश नारायण अस्थि रोग अस्पताल, पटना

निदेशक, राजेन्द्र नगर नेत्र रोग अस्पताल, पटना

सभी अधीक्षक/उपाधीक्षक, सदर अस्पताल/सभी अनुमंडलीय अस्पताल

पटना, दिनांक 09/01/2025.....

विषय: राज्य के स्वास्थ्य संस्थानों में अधिष्ठापित PSA Generation Plants की क्रियाशीलता को जाँचने हेतु दिनांक 11.01.2025 को 7th Round Mock drill कराने के संबंध में।

महाशय,

उपर्युक्त विषय के संबंध में निदेशानुसार कहना है कि राज्य के विभिन्न मेडिकल कॉलेज अस्पतालों तथा स्वास्थ्य संस्थानों में कुल 123 PSA Oxygen Generation Plants अधिष्ठापित किये गये हैं। उल्लेखनीय है कि मेडिकल ऑक्सीजन के उत्पादन एवं आपूर्ति की व्यवस्था सुदृढ़ करने हेतु अधिष्ठापित किये गये PSA Plants की सतत् क्रियाशीलता सुनिश्चित करना आवश्यक है, ताकि आकस्मिकता/आवश्यकता की स्थिति में बिना किसी व्यवधान के मेडिकल ऑक्सीजन की आपूर्ति अस्पताल के शय्याओं (बेड) पर हो सके। इस हेतु नियमित समयान्तराल में PSA Generation Plant के Readiness तथा Functionality की सही स्थिति का आकलन करते हुये आवश्यकतानुरूप समुचित कार्रवाई ससमय किया जाना अनिवार्य है। इस हेतु दिनांक 23.12.2021 (1st Round), 25.02.2022 (2nd Round), 16.06.2022 (3rd Round), 08.11.2022 (4th Round), 24.11.2023 (5th Round) एवं 12.09.2024 (6th Round) को सभी PSA Plants में Mock drill का आयोजन किया गया था। Mock drill के पश्चात इसके प्रतिवेदन की समीक्षा कर कई सुधारात्मक उपाय भी किये गये हैं। पूर्व की भांति Mock drill के पश्चात Google Form (Link: <https://forms.gle/n19DBhTpuJ6nJakEA>) में सूचनाओं की प्रविष्टि कर राज्य स्वास्थ्य समिति बिहार, पटना को प्रतिवेदित किया जाना है। साथ ही, पत्र के साथ Mock Drill के दौरान प्राप्त परिणामों की प्रविष्टि हेतु विहित प्रपत्र भी संलग्न है, जिसे हस्तलिखित कर अधीक्षक/उपाधीक्षक/प्रभारी चिकित्सा पदाधिकारी, नोडल पदाधिकारी PSA एवं अस्पताल प्रबंधक के संयुक्त हस्ताक्षर से प्रतिवेदन drugcell@gmail.com एवं psabiharshsb@gmail.com पर भेजना सुनिश्चित किया जाय।

2. बिहार राज्य में प्रत्येक PSA Plant के लिये Mock drill दिनांक 11.01.2025 (शनिवार) को निर्धारित किया गया है। Mock drill के पूर्व भारत सरकार द्वारा निर्गत दिशा-निर्देश का अध्ययन कर तैयारी कर ली जाए, ताकि Mock drill Exercise सफल एवं उद्देश्यपरक हो। उक्त Mock drill Exercise राज्य के सभी PSA Plants (PM Cares, राज्य सरकार के सौजन्य से अधिष्ठापित) में उक्त निर्धारित तिथि को कराया जाना है।

जीवन्त बिहार... सपना हो साकार

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दूरभाष : 0612-2290328, वेबसाइट : <http://shs.bihar.gov.in>



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3. PSA Plant के Mock drill हेतु निर्गत दिशा-निर्देश इस पत्र के साथ संलग्न है। Mock drill हेतु मुख्यतः निम्न बिन्दुओं का ध्यान रखा जाए:-

- PSA Plant के Designated Nodal Officer, PSA Technician, Bio-Medical Engineers तथा अन्य उच्च पदाधिकारियों की उपस्थिति में यह Mock drill किया जाए।
- यह Mock drill सुबह 9 बजे से शुरू होकर न्यूनतम छः घंटों की अवधि तक के लिये किया जायेगा।
- Oxygen Purity Level जाँच करने हेतु PSA Control Panel पर प्रदर्शित Purity level को दो-दो घंटों के अन्तरात पर 3 readings क्रमशः पूर्वाह्न 11 बजे, अपराह्न 01 बजे तथा अपराह्न 03 बजे नोट किया जाए।
- उक्त छः घंटों में ऑक्सीजन की शुद्धता मानक 90-96% प्राप्त नहीं होने पर Mock drill की अवधि को 12 घंटे तक विस्तारित कर दिया जाए। यदि फिर भी ऑक्सीजन की उक्त मानक शुद्धता प्राप्त नहीं होती है तो संबंधित Implementing agency (DRDO /HITES /CMSS /Others) एवं राज्य स्वास्थ्य समिति बिहार तथा बिहार चिकित्सा सेवाएँ एवं आधारभूत संरचना निगम लिमिटेड, पटना के संज्ञान में लाया जाए।
- PSA Plant के संचालन के दौरान Manifold तथा MGPS का भी निरीक्षण किया जाए कि कहीं कोई Leakage तो नहीं है। इस दौरान इसका भी परीक्षण किया जाना अनिवार्य है कि PSA Plant से प्रवाहित ऑक्सीजन का दाब (Pressure) 4 से 6 Bar के बीच हो तथा रोगी के Bed पर प्रवाहित ऑक्सीजन का दाब (Pressure) लगभग 4.2 bar होना चाहिए।
- स्वास्थ्य संस्थानों में अग्नि सुरक्षा के दृष्टिकोण से IPHS के मापदंड एवं मार्ग-निर्देश के अनुरूप Fire Extinguisher (अग्निशमन यंत्र) की भी जाँच कर संतुष्ट हो लिया जाये।
- Mock drill Exercise के बाद Google Form (Link: <https://forms.gle/n19DBhTpuJ6nJakEA>) पर संदर्भित सूचना की प्रविष्टि कर Submit किया जाए और साथ ही, संलग्न प्रपत्र (Annexure 2- Indicative Data Reporting Format) में वांछित सूचनाओं को ध्यानपूर्वक भरते हुये उसकी हस्ताक्षरित प्रति दिनांक 11.01.2024 को अपराह्न 4 बजे तक drugcell@gmail.com एवं psabiharshsb@gmail.com पर अनिवार्य रूप से भेजा जाए।
- साथ ही, Google Form भेजने के तुरंत पश्चात DPMU एवं PSA Bihar WhatsApp Group पर 'Mockdrill conducted and Google form submitted for <Name of the Health facility>' लिखकर WhatsApp Group पर पोस्ट कर दें, ताकि राज्यस्तर पर Mock drill सम्पन्न स्वास्थ्य संस्थानों की गणना की जा सके।

4. Mock Drill की प्रक्रिया को सुगम बनाने हेतु Drill के दौरान जाँच किये जाने वाले Parameters की सूची Annexure 3A तथा PSA संबंधित तकनीकी Issues के निराकरण की विधि एवं इसके लिए चिन्हित प्राधिकार Annexure 3B में अंकित है, जिसका अवश्यकतानुसार संदर्भ लिया जा सकता है।

5. सभी क्षेत्रीय अपर निदेशक एवं सिविल सर्जन यह सुनिश्चित करेंगे कि उनके अधीनस्थ जिलों के सभी स्वास्थ्य संस्थानों में निर्धारित तिथि को समयानुसार PSA Oxygen Generation Plant का Mock drill Exercise कार्य संपन्न हो जाये। इस संपूर्ण प्रक्रिया का अनुश्रवण क्षेत्रीय अपर निदेशक तथा

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सिविल सर्जन द्वारा करते हुये इसके फलाफल से राज्य स्वास्थ्य समिति बिहार को अवगत कराया जायेगा।

6. अतः निदेशानुसार अनुरोध है कि उपरांकित कंडिकाओं एवं पत्र के साथ संलग्न दिशा-निर्देशों के अनुरूप दिनांक 11.01.2025 को समयानुसार PSA Oxygen Generation Plant का Mock drill Exercise कार्य संपन्न कराते हुये यथानिदेशित प्रतिवेदन अचूक रूप से भेजने की कृपा की जाय।
अनुलग्नक: यथोक्त।

विश्वासभाजन

(राजेश कुमार) 09/1/25

ज्ञापांक...S74571..... पटना, दिनांक...09/01/2025-

प्रतिलिपि :

- अपर मुख्य सचिव, स्वास्थ्य विभाग, बिहार को कृपया सूचनार्थ प्रेषित।
- सचिव स्वास्थ्य विभाग, बिहार को कृपया सूचनार्थ प्रेषित।
- लता गणपति, भा०प्र०से०, संयुक्त सचिव, स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार, निर्माण भवन, नई दिल्ली को कृपया सूचनार्थ प्रेषित।
- प्रबंध निदेशक, BMSICL, पटना को कृपया सूचनार्थ प्रेषित।
- सभी जिला पदाधिकारी को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।
- माननीय मंत्री, स्वास्थ्य विभाग, बिहार के आप्त सचिव को सूचनार्थ प्रेषित।
- सभी क्षेत्रीय अपर निदेशक, स्वास्थ्य सेवायें को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।
- सभी जिला कार्यक्रम प्रबंधक/जिला मूल्यांकन एवं अनुश्रवण पदाधिकारी, बिहार को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।
- श्री मनीष रंजन, सहायक निदेशक, औषधि-सह-राज्य नोडल पदाधिकारी, PSA, राज्य स्वास्थ्य समिति बिहार को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।
- श्री भारत भूषण दहिया, तकनीकी परामर्शी, ऑक्सीजन प्रबंधन यूनिट, स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार, नई दिल्ली को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।
- सभी हॉस्पिटल नोडल ऑफीसर, PSA, बिहार को सूचनार्थ एवं आवश्यक कार्रवाई हेतु।

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प्रभारी, प्रोक्योरमेंट

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Annexure-1 - PSA Mock Drill Introduction & Guidelines

Introduction to Mock Drills

3900+ PSA plants have been installed under various funding sources across States/UTs. These plants augment the total medical oxygen capacity in the country and increase the on-site production capability of medical oxygen. Mock Drill is an important tool for States/UTs to ensure that these plants are able to produce oxygen with adequate purity, pressure, have no leakages and subsequently be used for administering oxygen to patients. The aim of Mock Drill is below:

- Ensure plants go through a standard operating procedure to operate, measure and record important metrics
- Check operational status and full functionality of the PSA plants
- Identification of issues for agency / vendor and subsequent redressal of the same at the earliest

General Instructions

- The drill should be conducted by the hospital Biomedical engineer/ PSA technicians and under the supervision of the HNO/competent authority, Senior officials in the state/ Health facilities such as CMO/MS etc. should oversee the mock drill and ensure compliance.
- If a facility has more than one PSA, then mock drills should be conducted for each PSA. A Google Form must be filled for each PSA plant, mentioning all relevant details as per Annexure - 2

Instructions for day of the Drill

- The minimum duration of the drill should be 6 hours, starting preferably at 9 am. Hospital authorities are recommended to run the PSA plant at full capacity (maximum rated flow rate) during the mock drill.
- Oxygen purity should be checked in the PSA control panel display every 2 hours for a total of 3 readings at 11 am, 1 pm, and 3 pm. Oxygen purity for each PSA plant should be 90-96%. If purity is not attained in this timeframe, then the drill can be extended to 12 hours. In case purity is not attained, concerned authorities and service engineers must be notified.
- Check and ensure that the PSA plant is connected to facility MGPS and there are no leakages either in the linked MGPS pipeline and manifold. If leakages are found, the competent authority (HNO, Hospital Administration etc.) should raise the issue with the respective vendor and the implementing agency (DRDO/HITES/CMSS)
- Oxygen pressure and flow rate should be measured at the oxygen outlet at the patient bedside (while the pressure at bedside should be ~4.2 bar). The Oxygen pressure from PSA should be ranging between 4 and 6 bar.
- Total machine runtime (oxygen generation module runtime) should be measured from the main control panel
- Adequate availability of fire safety prevention and precaution systems in the facility, as recommended under the IPHS guidelines or relevant state level healthcare system guideline, should be checked, and ensured

- The identified gaps should be reported and immediately resolved by the competent state agency/PSA supplier

Reporting of the mock-drill results

- All the information should be recorded in a standardized format (a sample format has been attached as Annexure-2) for all PSA plants across the state and reported to the relevant authorities.
- If the plant is being used continuously for patients requiring oxygen therapy, please fill the reporting form for metrics which do not impact the oxygen delivery process (Eg. Oxygen Purity % from control panel, PSA output pressure) and can avoid bedside metrics (purity & pressure) while filling the form
- The results should be shared positively before 2pm the day after the mock drill is conducted in a standard format.
- The result of mock-drills for each PSA plant should be signed by both the respective hospital administration and the supervising executive engineer or equivalent authority
- It is recommended that the State government use the shared Google Form (bit.ly/psamockdrill) to collect mock drill results for each PSA plant. In case the form is not accessible, hard copies can be sent to facilities and data can be digitized at the state level in an excel format within a week before sharing it with MoHFW.

Data-entry guidelines:

- Please ensure that you select the correct “Mock-drill Round” while entering the information.
- If the plant isn’t commissioned or functional at all,
 - kindly fill all the PSA and facility related details such as HNO name, contact number, training status, vendor details etc.
 - For every parameters related to a functional PSA plants such as purity, pressure, leakage, please enter 0, and
 - Mention the issue in detail in the comment section
- Don’t enter multiple entries for a particular PSA plant. Some states had shared multiple duplicate entries in mock drill Round 1, please be careful in data entry and follow the recommended process

Directions for checking oxygen flow, pressure and purity at Main control Panel / Wall outlet / bed head pendant during mock drill

- O2 purity, flow to be measured using O2 analyzer and external flow meter. This will help assess calibration of in-built measuring devices in PSA.
- Visually check all wall outlets / bed head panels for leakage
- Ensure flow meter connector and humidifier bottle are tightly fitted, check oxygen flow functional check before clinical use.
- Flow can be measured through a flow meter
- Pressure can be recorded at area alarms installed at nursing stations /floor / zone wise
 - Pressure can be checked using the ventilator inlet pressure or a pressure gauge
- Purity can be measured with the help of ventilator Fio2 feature or an oxygen analyzer. If the facility does not have an analyzer, it is recommended to be used for this exercise.

Directions for measuring total Oxygen generation module runtime (in hrs)

- Oxygen generation module runtime is measured from the control panel
- This metric can help in the following:
 - Can be utilized to measure the total oxygen generated from the equipment
 - May indicate when the next maintenance visit is required based on the runtime over the previous maintenance visit



Logbook Template for PSA plants

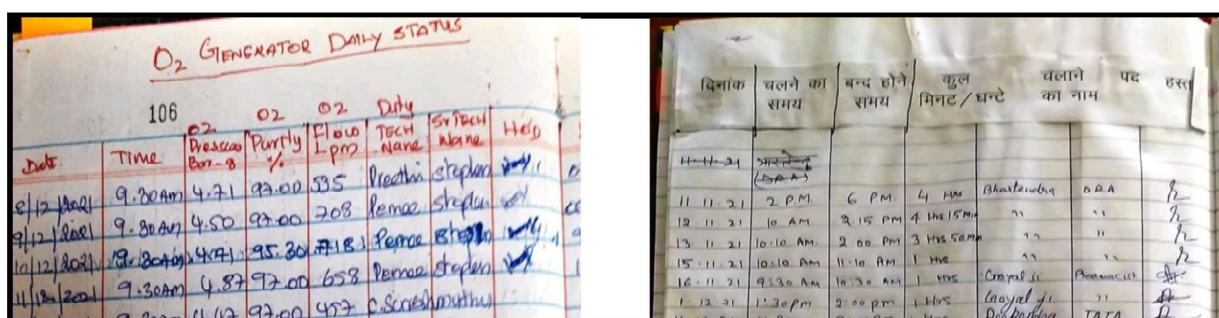
- Mock drill results should be noted in the PSA log book, a format for the same is provided below

Daily logbook templates for PSA plant:
 PSA plant: (Plant 1 / Plant 2/ Plant 3)
 PSA Plant Capacity: (LPM)

Date	Time	Air compressor running hours reading			Air receiver (Buffer Storage) tank pressure	Oxygen Purity	Oxygen Flow rate	Oxygen Pressure	Oxygen receiver (Buffer storage) tank pressure	Status of air inlet filter / Cleaning	Signature of duty operator / technician	Remarks (If any failure)
		ON	OFF	Total								

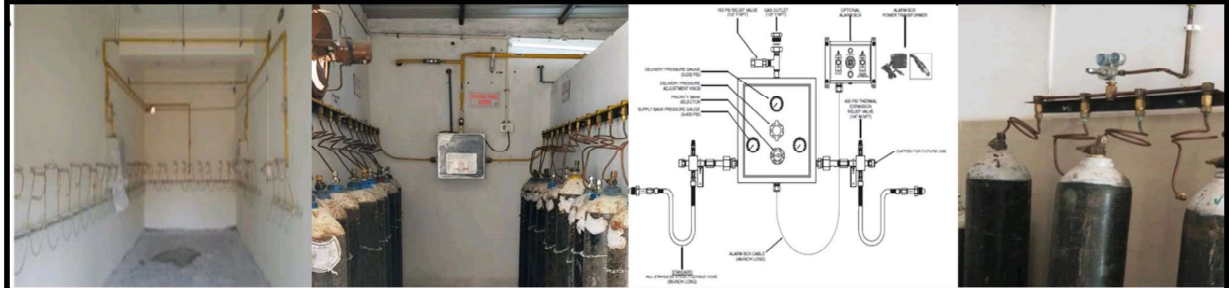
Note: Record the down time.

- Record the PSA parameters on a daily basis (as given in above template) - Performance of air compressor, PSA generator, filter status, purity, and pressure of system
- Templates may be different as per vendor recommendation.
- If there is any indication of sub-optimal performance, the plant operator must intimate the facility manager and register a complaint for service support. Hospital nodal Officer should escalate issues to respective vendors/ implementing agencies/suppliers
- Samples of actual log books provided below:

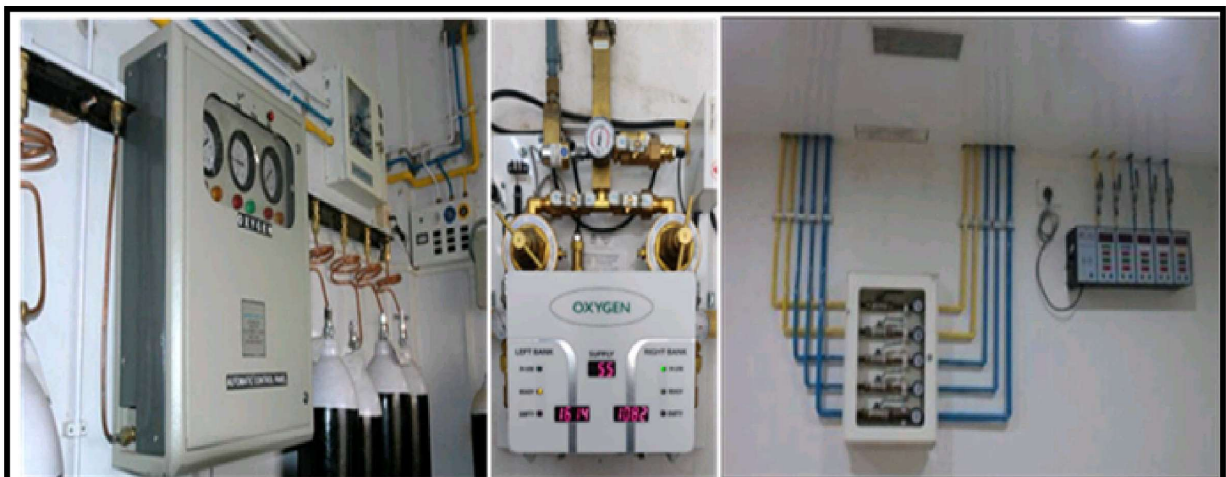


Key Components of Oxygen System

Manifold Room



- (a) Manifold room
- (b) Manifold room with oxygen cylinder arrangement
- (c) Manifold room control arrangement
- (d) Emergency Manifold arrangement



- (a) Oxygen Manifold control panel (analog)
- (b) Oxygen Manifold control panel (digital)
- (c) Floor isolation valves and area alarm system



Inlet Filter Status

If the gauge needle is in green marking - This means filter in usable condition.

If the gauge needle is near to red marking - This means the filter needs to be replaced soon.

If gauge needle in red marking area - This means filter needs to be replaced immediately

Frequently Asked Questions (FAQs)

1. *What if the patients are on oxygen therapy, should I conduct mock drills? Or PSA is working fine and is under use, do I need to fill the form?*

If PSA is being used for oxygen therapy to patients and is under use, then the administration should record parameters per the prescribed format (google form) without disrupting the oxygen therapy to patients and conclude the mock drill accordingly

2. *If the plant is not functional at all, what should I report? Or If the plant is not commissioned yet, what should I report?*

If the plant isn't functional at all or not commissioned, follow the below steps:

- i. Kindly fill all the PSA and facility related details such as HNO name, contact number, training status, vendor details etc.
- ii. For every parameters related to a functional PSA plants such as purity, pressure, leakage, please enter 0
- iii. Mention the issue in detail in the comment section
- iv. HNO should raise the issue to SNO, vendor and agency accordingly

Annexure 2 - Indicative Data reporting Format

	Parameters for sharing the result of PSA Mock drill (data collection via online survey recommended)	Directions/Instructions	Illustrative data entry	Actual Entry when Mock Drill is Conducted
A	General Details (Facility, Plant)			
1	Which round of mock drill is being conducted?	Enter Round 1 or Round 2	Round 2	
2	Date of assessment (dd-mm-yyyy)		10/2/2022	
3	Email address of the drill in-charge		xyz@gmail.com	
4	Name of Medical Superintendent(GMC)/ Civil Surgeon / Hospital Incharge		Dr Ramesh Kumar	
5	Mobile Number of Medical Superintendent (GMC) / Civil Surgeon / Hospital Incharge		840037XXXX	
6	Email of Medical Superintendent (GMC)/Civil Surgeon /HNO		abc@gmail.com	
7	Name of Health Facilities where PSA Plant is Installed		DH ABC	
8	District		ABC	
9	State		XYZ	
10	Type of Health Facilities where PSA Plant is Located	DH/CH/CHC/GMC/PHC	District Hospital	
11	No. of Oxygen Beds available		50	
12	Funding source of PSA	PMCARES/CSR/State/PSU/Foreign Aid	PMCARES	
13	Enter Implementing Agency Name	DRDO / HITES / CMSS (in case of PMCARES only)	DRDO	
14	Vendor / Manufacturing Company (PMCAres only)	List of 24 vendors in case of PMCARES provided on google form	TASL	
15	Capacity of PSA Plants (in LPM)	If facility was assigned 2000 LPM and has two 1000 LPM plants, then fill 2 separate assessment forms	1000	
16	Vendor name/Manufacturing Company of PSA Plant	Only for Non PMCARES PSA Plants	-	
B	PSA Technician / Training Details			
1	Name of the Designated PSA Plant Technician - 1		None	

2	Contact Number of the Designated PSA Plant Technician - 1			
3	Has PSA Plant Technician - 1 been trained?	Enter "Yes" or "No"	YES	
4	Optional Question - Type of training	10 hr or 180 hr	10-hour	
5	Name of the Designated PSA Plant Technician - 2			
6	Contact Number of the Designated PSA Plant Technician - 2		No	
7	Has PSA Plant Technician - 2 been trained?	Enter "Yes" or "No"		
8	Optional Question - Type of training	10 hr or 180 hr	10-hour	
9	Has the training manual and service manual been made available in English and local language (by vendor)?	Enter "Yes" or "No"		
C	PSA Mock Drill Results			
1	Is the facility maintaining records of routine PSA data?	Enter "Yes" or "No"	YES	
2	What is the total machine runtime since installation?	PSA plants have total runtime (measured in hours), which can be seen in the central control panel.	1250	
3	O2 Purity displayed @ 11:00 AM (in Percentage)	Please don't enter above 100%	91	
4	O2 Purity displayed @ 01:00 PM (in Percentage)	Please don't enter above 100%	93	
5	O2 Purity displayed @ 03:00 PM (in Percentage)	Please don't enter above 100%	94	
6	What is the manifold room pressure?	Range 4-6 bar, depending upon the MGPS infrastructure	5 bar	
7	What is the pressure at PSA output? (in Bar)		5 bar	
8	What is the pressure at the non-ICU bedside? (in Bar)		5 bar	
9	What is the pressure at the ICU bedside? (in Bar)		5 bar	
10	Flow generated by the PSA plant (in LPM)	Please run the plant at 100% flow rate, this will ensure the plant is run at max output and indicate the purity, pressure accordingly	600	
11	Is there any Zeolite / White Powder Issue?	Please highlight if any filter related issues		
12	Is there any leakage in Manifold room?		NO	
13	If YES please provide brief discription of Corrective Measure taken	Mention the issue in detail		

14	Is there any leakage from Manifold to O2 Outlet at Patient Bed		YES	
15	If YES please provide brief description of Corrective Measure taken	<i>Mention the issue in detail</i>	-	
16	Is there any leakage in MGPS line from PSA Plant to Manifold		YES	
17	If YES please provide brief description of Corrective Measure taken	<i>Mention the issue in detail</i>	-	
18	Are back-up oxygen cylinders available at the manifold room?	<i>24 hour back-up should be available, depending upon the hospital infrastructure</i>	YES	
19	Do you have 24 hour electricity backup?		YES	
20	Please provide details on electricity backup.		TBU	
21	Availability of Appropriate and Functional Fire Safety Measures in Hospital	<i>As per IPHS guideline or state health system guidelines. Mention the measures taken</i>	YES	
22	Are Isolation Area Alarm for gas leakages and line pressure installed at every nursing station/floor?	<i>Provide details</i>	NO	

Annexure 3A

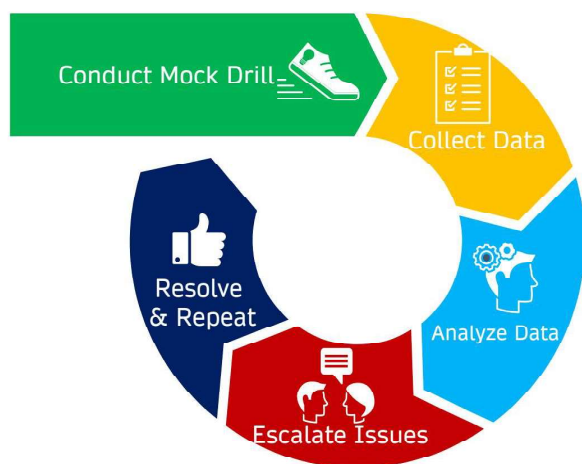
PSA Mock Drill IEC by MoHFW

Why Mock Drill?



- Ensure full functionality of all the PSA plants installed across State/UT
- Remain prepared during medical emergencies such as COVID-19 wave
- Enable timely issue resolution based on mock-drill output
- Acclimatize facility officers' with PSA day-to-day operations, issue handling and

Steps required in Mock Drill



Conduct Mock Drill

Conduct mock drills in all facilities with PSA plants, as per government guideline

Collect Data

Capture data in the Google Forms shared

Analyze Data

Analyze functionality across purity, pressure, flowrate of PSA plants in facilities

Escalate

Escalate issues to respective vendors/ implementing agencies/suppliers

Resolve & Repeat

Ensure timely resolution of all issues; Repeat the mock drills every 1-2 months

What do we aim to measure?

Functionality Check

- Run PSA at **full capacity (maximum flow rate)** from 9:00AM and take readings **every 2 hour**
- Measure oxygen purity, pressure, flow rates at 11:00AM, 1:00PM and 3:00PM
- Overall PSA machine runtime (in hours)

MGPS Check

Check pipelines for leakages

Between PSA and Manifold

Between Manifold and Wards

In the manifold

Electrical Supply Check

Checks to ensure 24/7 electrical supply

Availability of DG set

Voltage fluctuation

Wiring/connection faults

Technician Availability Check

- Check if **at least 2 trained technicians are available on the site 24/7**
- Specify the kind of training they received (10-hour, vendor, state training, etc.) and training modules from vendor

Fire Safety Check

- Check for **appropriate safety measures as per IPHS/state health system guidelines**
- Relevant HR aware of fire safety measures



Best Practices for conducting a Mock Drill

- Run PSA at **full capacity (maximum flow rate)** and take readings **every 2 hours**
- Preferably use external O2 analyzer to check purity, and pressure gauge to measure pressure
 - At bed side, you can use ventilator to measure purity, pressure or flow
- Mock drill must be conducted for **ALL plants**, irrespective of whether they are working fine or not. If plant is operational, then simply measure the indicators and report on google form
- Ensure correct data is entered only in the google form shared by MoHFW and double check before submission
- In case multiple oxygen sources are present (LMO, cylinder, etc.), preferably switch-off other sources and take measurements at bed-side, if possible





Problem/Fault	Possible Cause	Solution	Responsible Stakeholder
ON/OFF button does not illuminate/Plant does not cycle 	No electrical power	- Check connection with main power supply - Ensure DG set is installed for uninterrupted power	PSA Operator
	Circuit Breaker has tripped	Reset circuit breaker	PSA Operator
	PSA plant in standby mode	Plant will start again once the pressure goes down below the set point for standby mode	PSA Operator
	ON/OFF switch bulb tripped	Replace light bulb	Vendor
Low Operating Pressure 	Loose wiring / defective switch	Repair or replace	Vendor
	Restriction in suction air intake filter	Check and replace filter elements	Vendor
	Clogged pre-filter	Clean the air filters regularly and make sure Inlet feed air valve fully open and lines are clear	PSA Operator
	Compressor output reduced	Corrective maintenance should be performed	Vendor
High Operating Pressure	O2 demand > PSA capacity	- Check oxygen usage - Check Leakage in MGPS hose pipe	PSA Operator
	Clogged muffler	Clean or replace the muffler as per manufacturer instruction manual	Technician
	Contaminated sieve beds	Change the adsorbers material	Vendor
	Sensor problem (either ultrasonic sensor or electro-chemical sensor is defective)	- Calibrate the sensor for environmental air @ 21% - Ultrasonic sensor has a long life-span, typically no need for re-calibration. If defective, needs replacement - For electro-chemical sensor, low shelf life (< 2yrs), after this needs replacement	Vendor
Purity Problem	Defective Oxygen analyzer	Repair or replace	Vendor
	Obstructed O2 sample flow line	Ensure that all valves on the oxygen sample line to oxygen analyzer are open	PSA Operator
	Inadequate inlet air	- Check inlet air lines for obstructions. - Adjust or replace the inlet air regulator	PSA Operator
	Leakage in internal pipeline	Check connecting pipe and valve for internal leakage	PSA Operator
	Dew point check on air Dryer	Check and set dew point set to 3 - 7 °C, if problem persists, needs repair	Vendor
	Clogged carbon activated pre-filter	Needs replacement	Technician/ Vendor
	Molecular sieve or zeolite	Replace adsorbing material	Vendor
Dust particles in PSA output	Molecular sieve or zeolite	Replace adsorbing material	Vendor
Compressor trips	Power supply fluctuations	Servo voltage stabilizer if required	Vendor
Overheating of air compressor	Low voltage /low compressor oil due to leakage	- Check mains power supply and Input voltage - Fix the leakage and refill with oil	Hospital/Vendor
PSA relief valve open	Pressure > max. pressure/ Defective relief valve	- Adjust feed air regulator - Replace the relief valve	PSA Operator/ Vendor
Any hardware failure	Malfunction during plant operation	Vendor, per the contract, bound to provide corrective action/replacement within warranty	Vendor
3rd Party lab testing report	Sample collection and report submission delay	- Vendor collects O2 sample in presence of hospital authorities & submit the report to them - OR - Hospital takes the sample and sends it to an NABL approved labs on a regular basis. Must repeat this activity whenever any major part is replaced	Vendor
			Hospital