INTER PLANT STANDARD – STEEL INDUSTRY		
IPSS	**SAFETY PROCEDURE FOR LANCE CUTTING**	**IPSS:1-11-016-20 (First Revision)**
	No corresponding Indian Standard exists	**Formerly IPSS: 1-11-016-12**

0. FOREWORD

0.1 This Inter Plant Standard formulated by the Standards Committee on Personnel Safety Appliances & Procedures, IPSS 1:11, with the active participation of the representatives of steel plants and associated organizations in the field. This standard was adopted in April 2012 and revised with first revision in **June, 2020**.

0.2 Activities involving multiple agencies in a steel plant invariably require a coordinated approach for smooth progress of work. This aspect assumes greater significant when the activity is either hazardous in nature or carried out in hazardous ambience.

0.3 This safety guideline aims to ensure safety during lance cutting to prevent hazards like explosion, fire, burn & fumes of un-burnt gases

1. SCOPE

1.1 This Inter Plant Steel Standard provides guidance in carrying out lance cutting jobs at site.

2. NECESSARY DOCUMENTATION

2.1 Safety Requirement / Precautions:

Before starting the job at site, all the safety requirements like safety helmet, safety goggle, face shield, overhaul, hand gloves, safety shoes, anklets, fire/ flame proof jacket, neck guard, heat resistant visor, suitable fire extinguishers shall be decided as per the need of the area/ site by the executing agency in association with safety officer and contractor. These shall be documented.

3. SAFETY TALK

3.1 Before commencement of work in each shift, all workers shall be given a safety talk by executing officer or his representative and this shall be recorded by the person in a register.

4. POTENTIAL MAJOR HAZARDS

a) Chance of fire / explosion

b) Metal burn

c) Fumes of un-burnt gases.

5. EXECUTION OF WORK

5.1 Pre-Requisites for Carrying Out Lance Cutting Work

a) Before carrying out lancing, make thorough inspection of the work place and ensure that it is safe for lancing operations. Area where lance cutting work is to be carried out shall be cordoned off with rope and flag.

b) The executing officer, safety officer and in-charge of the shop, where the lancing work is to be carried out, shall inspect the site, identifying the potential hazards [heat, chemical, fire, gases, etc.]

c) No person shall be allowed to stand, walk or do any work or go for any other purpose near cordoned off area.

d) During lance cutting operations safe distance shall be maintained by lance cutter so that spark coming out from the cutting does not reach the cutter.

e) As lance cutting operation produces sparks which can travel long distances, inflammable material shall not be stored in the vicinity of lance cutting operation.

f) Examine whether the job of lance cutting can be done outside. If not, remove all the combustible material to a safe distance of at least *6 Meters*.

g) If combustible material cannot be removed, cover it with non combustible coverings.

h) A valve along with pressure gauge on the Oxygen pipe line from where tapping for lance cutting is taken shall be provided.

i) Identification mark shall be provided for the oxygen tap-off pipe line.

j) Standard Operating Practices (SOPs) related to lance cutting shall be displayed near the work place.

k) Initially the lance pipe shall be ignited with the help of a burn bamboo or fire wood.

l) During lance cutting lance pipe is to be kept on stand and proper angle for cutting to be maintained, so that sparks/liquid metal shall not fall towards lancer/cutter.

m) Lance pipe shall not be used for cleaning human body parts.

n) For lancing pipes involving the use of higher diameter, the pipeline shall be provided with a regulation valve for maintaining pressure.

o) Lance pipe must be changed after 70 to 75% consumption of its length.

p) Provision of Flash Back Arrestor (IS: 11006) to be ensured at both ends in the lance cutting system.

5.2 **Selection of Pipes & Hoses**

5.2.1 Lance pipe [6mm to 52mm] shall have thread arrangement at both ends and shall be connected to Oxygen gas supply properly [by tightening the socket]. Lance pipe shall conform to IS : 10577-1982

5.2.2 Minimum length of the lance pipe inside the hose shall be 200 to 300 mm and clamped by tightening thread & socket. Hose shall conform to IS: 447-1988.

5.2.3 Lancing pipe length should be as per suitability of job.

S.No.	Area of Use	Lance Pipe Length (In Metre)
1.	Heavy Jam Cutting at Open Area	3.5 m
2.	Normal Jam Lancing at Open Area	3 m
3.	Lance jam lancing	1.5 m
4.	Normal lancing at any point or area	2.0 m
5.	Ladle slide gate lancing	1.2 m
6.	Ladle Lancing (Straight position)	1.5 m
7.	Slab Cutting by lancing	2.5 m
8.	Refractory lance jam cutting (De-Sulphurisation (DS), Laddle Furnace (LF), Online Purging station (OLP))	2.0 m

6.0 Lancing in confined space (Preferably to be avoidable)

6.1 Lancing activities in RH vessel, LD vessel, Mixer or any enclosed chamber to be considered as Category ‘A’ confined space & accordingly confined space standard to be followed. (IPSS No.1-11-006-14)

6.2 Manual / motorised rescue system to be suitably installed. Provision of water line to be made.

6.3 Ensure adequate ventilation . When sufficient ventilation can not be obtained without blocking the means of access , employee in the confined space shall be protected by air line respirators.

CHECK LIST (For Lance cutting operation)

1	Whether the area where lance cutting work is to be carried out shall be cordoned off with rope and flag.	Yes/No
2	Whether identification mark is there in O2/gas supply line.	Yes/No
3	Whether the supply line [O2/gas] is fitted with pressure gauge near the valve from where supply is obtained.	Yes/No
4	Is there any leakage observed around valve.	Yes/No
5	Whether end of supply line a head valve is properly clamed with rubber hose.	Yes/No
6	Whether any leakage observed in rubber hose.	Yes/No
7	Is rubber hose connected with nipple with clamp having threaded socket at other end.	Yes/No
8	Whether the length of nipple ahead rubber hose to threaded socket at other end is around 600 mm.	Yes/No
9	Whether the lance pipe used for lance cutting having thread at both the end.	Yes/No
10	Is there any flammable material near the lance cutting operation	Yes/No
11	Whether lance pipe is kept on stand during lance cutting operation.	Yes/No
12	Whether the burnt bamboo or jute is used for lighting the lance pipe at the beginning.	Yes/No
13	Whether the cutter is at a safe distance from the object so that sparks coming out during lancing shall not reach to the cutter.	Yes/No
14	Whether lance pipe is changed after 70% consumption of its length.	Yes/No
15	Whether fire extinguisher are there near the work place.	Yes/No
16	Whether safety goggle or face shield is being used by the lance cutter.	Yes/No
17	Whether blue drill is being used by cutter.	Yes/No
18	Whether hand gloves is being used by cutter.	Yes/No
19	Whether safety shoe and anklet is being used.	Yes/No
20	Whether cotton clothes are put by cutter.	Yes/No