

**GOVERNMENT OF INDIA  
RAILWAYS  
LOK SABHA**

UNSTARRED QUESTION NO:2242  
ANSWERED ON:07.12.2006  
CONTROL OF HYDROGEN IN RAIL STEEL  
Singh Chaudhary Lal

**Will the Minister of RAILWAYS be pleased to state:**

- (a) whether the rail manufacturer in foreign countries are using Tank Degasser or RH Degasser or both these processes for control of hydrogen in rail steel;
- (b) if so, the details thereof;
- (c) the details of the process being used by the manufacturers of rails in India;
- (d) the specification issued in this regard by the Railways;
- (e) whether any representations have been received to set up an independent Committee of Metallurgists to review and amend these specifications; and
- (f) if so, the details thereof and the action taken in this regard?

**Answer**

MINISTER OF STATE IN THE MINISTRY OF RAILWAYS (SHRI R.VELU)

(a) to (f): A statement is attached.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (f) OF UNSTARRED QUESTION NO.2242 BY CHAUDHARY LAL SINGH TO BE ANSWERED IN LOK SABHA ON 07-12-2006, REGARDING CONTROL OF HYDROGEN IN RAIL STEEL.

- (a): Rail manufacturer in foreign countries are having both the processes i.e. Tank Degasser, RH Degasser for control of hydrogen in rail steel. In European countries and Japan, in general, the process of RH degassing is used while in American countries, the tank degassing process is used;
- (b): The details of Rail manufacturer in foreign countries having Tank Degasser or RH Degasser is not maintained in Ministry of Railways;
- (c): R H Degasser for control of hydrogen is being used by Bhilai Steel Plant, Bhilai, the sole supplier of rails to Indian Railways;
- (d): The relevant para of the specification for hydrogen removal from rail molten steel is as follows "Vacuum degassing of liquid steel shall be done to reduce the hydrogen content. For this purpose RH degasser shall be used. The vacuum level and the duration for which liquid steel shall be kept under this vacuum level shall be decided mutually by the purchaser and the manufacturer. All measurement of hydrogen shall be done for the liquid steel in tundish or mould. Any other method of sampling or determination of hydrogen will require prior approval of the purchaser."
- (e) & (f): One firm and around twenty five Hon'ble MPs have represented in this regard. However, improvement in rail quality has always been a process of evolution and with the knowledge gained from world wide practices the specification of rail is being continuously updated. Prior to 1999 Bhilai was not using any degassing process resulting in a high hydrogen content in molten rail steel. Bhilai started using Vacuum Arc Degassing (VAD) which is quite similar to the vacuum tank degassing which was subsequently shifted to RH degassing from May 2000 onwards which is considered to be a superior process. It is opined that if some process can give a confidence of producing a consistent quality product in a critical item like rail there is no harm in specifying a particular process. In the opinion of the Ministry of Railways RH degasser is a superior technology and should be retained in the specification and, therefore, it has been decided that there is no point for setting up a Committee of independent metallurgists to examine the issue.