$$hv \rightarrow Cl\cdot + Cl\cdot + H_2 \rightarrow HCl + H\cdot + Cl_2 \rightarrow HCl + Cl\cdot + H_2 \rightarrow HCl + H\cdot \quad \text{and so on.}$$

In the presence of oxygen, the reaction of chlorine with hydrogen slows down.

The direct connection of chlorine and hydrogen is carried out in contact furnaces made of heat-resistant steel, their height sometimes reaches several meters and a diameter of more than half a meter. In the lower part of the furnace there is a burner consisting of two pipes inserted one into the other. Dry chlorine enters the inside of the pipe, and hydrogen enters the outside of the pipe. At the exit, hydrogen and chlorine burn with the formation of a flame; since the reaction generates heat (22,000 cal per g-mol *HCl*), the flame temperature reaches 2,400°C. In order to prevent contamination of hydrogen chloride with chlorine, a certain excess of hydrogen is fed into the burner, up to 5% against the theoretically necessary amount. The resulting hydrogen chloride is then sent from the top of the furnace for absorption by water or transferred to a liquid state.

Previously, the absorption of hydrogen chloride was carried out in special vessels, cooled to remove the heat generated by cold water or air and acting on the principle of counterflow. Liquid hydrogen chloride from the collection is sent to casting in steel cylinders. It contains up to 99.5% *HCl*. It should be noted that in dry hydrogen chloride, the bond between chlorine and hydrogen is covalent and therefore, without heating, it does not react with iron and most other metals.

According to the State Standard, hydrochloric acid must contain at least 27.5% *HCl*. Hydrogen chloride can also be converted to a liquid state. To do this, hydrogen chloride is sent to the refrigerator, where the condensation of hydrochloric acid vapor occurs. Further drying is carried out in a tower irrigated with sulfuric acid. Then, hydrogen chloride is compressed by a compressor to 100 atm. for the purpose of purification from oxides.