ABSTRACT OF DISCLOSURE

An object the invention is to provide a phosphorus pentafluoride producing process wherein phosphorus pentafluoride is separated/extracted from a pentavalent phosphorus compound or a solution thereof, or a composition obtained by allowing the pentavalent phosphorus compound or the solution thereof to react with hydrogen fluoride, thereby producing phosphorus pentafluoride; and a phosphate hexafluoride producing process wherein the resultant phosphorus pentafluoride is used as raw material to produce a phosphate hexafluoride high in purity. The present invention relates to a process for producing phosphorus pentafluoride, wherein a carrier gas is brought into contact with either of the following one: a pentavalent phosphorus compound, a solution thereof, or a solution in which a composition obtained by allowing the pentavalent phosphorus compound or the solution thereof to react with hydrogen fluoride is dissolved, thereby a phosphorus pentafluoride is extracted into the career gas.