

Kent Morton,

Recent laboratory work done in the USA has shown that when mixtures of arsenic trioxide and antimony trioxide with a high proportion of arsenic are purified by sublimation, gaseous polymeric compounds are formed, an effect that greatly enhance the volatilization of the antimony.

These polymeric species, which are all gaseous above about 350°C, are As_2SbO_6 , $\text{As}_3\text{Sb}_2\text{O}_6$ and AsSb_3O_6 and are formed when As_2O_3 reacts with Sb_2O_3 .

Further studies have shown also that these polymeric compounds can be decomposed between 400 and 600°C by adding oxygen (air) to the off gases of the roaster, to oxidize the antimony to SbO_2 and Sb_2O_3 , which are both solids compounds below 450°C, without oxidizing the As_2O_3 to As_2O_5 . Therefore, by adding air before the hot baghouse and controlling the temperature, it appears feasible to selectively condense the antimony and capture it in the hot baghouse.

To control the particle size of the solid SbO_2 and Sb_2O_3 , a controlled temperature drop can be achieved by adding the extra air at several points along the fluidized bed freeboard. In this form, the crystals of SbO_2 and Sb_2O_3 should be collected in the hot baghouse, producing a cleaner, near antimony-free arsenic trioxide product.

I recommend that we test this possibility, using the five days of testwork which I wrote into the supplementary proposal. A certain amount of time will be required to set up the air injection points but we should be ready to start on Monday. Please review and reply as soon as possible with your approval to run next week.


Mike Chalkley