

<b>Topic</b>	Haber Process and compromise conditions	<b>Level</b>	GCSE (or any other course for students aged 11-16)
<b>Outcomes</b>	To understand the effects of temperature, catalysts and pressure on the rate, yield and economics of ammonia production		
<b>Information for teachers</b>	This activity gets students to think deeply about compromise conditions. They need to think about the balance between rate, yield and cost.		

### The Haber Process: when life's just one big compromise!



Factory owner	Scientist – why is the factory owner wrong?!
“Let’s get this ammonia made quickly. I want the highest temperature we can get so that the rate of reaction is fast! There is no time to waste!”	
“Let’s use an iron catalyst because I want to increase the yield of ammonia.”	
“Using a pressure of 200 atmospheres is going to bankrupt me. These gases don’t compress themselves you know and I am going to need extremely strong and expensive pipes to withstand the pressure. Let’s use a pressure of 100 atmospheres.”	
“Let’s get hydrogen from H <sub>2</sub> O as water is free and so this will cost me nothing!”	

