>> Diane Jewell: Okay. What you see here are two compounds. This is ammonia. This is water. Okay? Ammonia would be our Bronsted-Lowry base, and water would be the Bronsted-Lowry acid. What we're looking at here is water with the hydrogen, oxygen, hydrogen. You'll notice oxygen has its full octet. So it's a satisfied molecule. Same with this. The nitrogen here has the octet of electrons. So again this is a stable compound. But when we put those two together, they tend to interact with each other in a way that, like I said, this is going to act like a lot of base, and this one is going to act like an acid. By an acid we say that an acid donates a proton. Okay? In this case this hydrogen here will be donated to the base, making water an acid. Okay? What is a proton? A proton is simply a hydrogen that's lost its electron. So if you're looking at what we're seeing here, here's the hydrogen. One of these two electrons belonged to that hydrogen before it bonded to oxygen, but when this hydrogen was released the hydrogen was released without its electron. And so the electron ended up staying around the oxygen here. The hydrogen then left without its electron, and it acquired a positive charge. So that's why we call that not a hydrogen ion necessarily, but we call it a proton. You can call it either one. Okay? What happens to this proton? Well, the proton now is looking for a pair of electrons because, you know, any time a hydrogen is missing its two electrons, it's not stable. It wants to be stable. And so it comes along. It finds nitrogen here. Nitrogen has two electrons that are just sitting there waiting to be donated to someone else. Well, in comes hydrogen then, and bonds with the ammonia. And now this hydrogen has its two electrons back. Ammonia has a nitrogen that still has the octet. And this has now formed an ammonium ion because it's no longer NH3, but NH4 plus. Okay. This, having lost its hydrogen, has formed OH minus or hydroxide. Okay? And so these are the products when you put ammonia and water together. You end up getting ammonium and hydroxide. Now you might ask yourself, "Where do the charges come from?" So let's take a look just for a minute at the number of electrons in each compound. If we look at nitrogen, nitrogen brings five electrons. Okay? Each of the hydrogens would normally bring one electron each. So that would be four more electrons. So theoretically if every one of these elements brought its correct number of electrons, we would be looking at nine electrons. Well, where would we put nine electrons? We know nitrogen can only accommodate eight electrons around itself. And so in order to be stable, one electron cannot be included in here. If you get rid of one of your electrons, you're getting rid of one of your negative charges, meaning then that it's resulting in a positive one charge. And so that's why when you make ammonium ion you have a positive charge on it. Now look at hydroxide. Hydroxide, you have your oxygen which brings six electrons in its valence shell. Hydrogen brings the one valence electron. Total of seven electrons. Not stable. Okay? Oxygen wants its octet. Oxygen wants eight electrons to be stable. So if it wants eight electrons, it's going to have eight electrons, and that's where – When this hydrogen left, it kept that extra electron. So we would expect to see seven electrons, but we see eight electrons because one electron extra has been brought in, bringing a negative one charge to this ion.