>> Diane Jewell: When we refer to solubility, we're talking about grams of solute that will dissolve in 100 grams of solvent. And quite often our solvent is water. Okay. Let's say we have something that has a solubility of 15.5 grams. What does that mean to us? Well, there's three situations that can occur. You may put some of this solute into your water. And you may be putting in less than 15.5 grams into 100 grams of water. The second situation is you may put exactly 15.5 grams into 100 grams of water. And then the third situation you might encounter is putting in more than 15.5 grams in 100 grams of water. So let's look at them individually. If the solubility is 15.5 grams and you're putting in less than what the solubility is, then you're going to find that all of it will dissolve. For example, if you put in 12.2 grams, all 12.2 grams will dissolve in your water. You would say that solution is unsaturated. And by unsaturated, what we're saying is that if we add a little bit more of that solute, that too will dissolve because the solution has not reached the point where we can no longer put any more of the solute in. We can still put in more solute. As a matter of fact, 15.5 minus 12.2 is 3.3. We can actually put in 3.3 grams more and have it dissolve. So it's an unsaturated solution because more solute can still dissolve in that solution. Now what happens if we put in exactly 15.5 grams? All of it will still dissolve. We would now say it's saturated. Now if you don't know what the saturation point is and you put in 15.5 and it all dissolves, you can't really tell the difference between unsaturated and saturated because they both would have everything dissolving. The only way you could tell that it's really saturated is if you add just a little bit more and you find that it comes out of solutions of precipitate. Then you would say oh, okay, that was a saturated solution. So if you put in exactly what you need to bring it up to its solubility level, you have a saturation solution or a saturated solution. Okay. What happens now if you put in more than the 15.5 grams? Let's say we put in 18.0 grams. The first 15.5 grams are going to go into solution. In other words, they're going to dissolve but everything above 15.5, the rest of that will not go into solution. So you have 18.0 minus 15.5 is 2.5 grams; 2.5 grams of the solute will not go into solution. In other words, it will precipitate. And a precipitate often looks like a cloudiness in the solution, but that cloudiness is actually little tiny particles of a solid that are kind of floating around. If you give them enough time, a lot of times they will actually fall down into the bottom of the container and then you can see that it is a layer of solid on the bottom of your container. This is definitely a saturated solution. So any time you put some solute in a solvent and part of it dissolves and the rest of it doesn't, it doesn't because it's a saturated solution. And a saturated solution can hold no more solute particles.