



## Crash Course Chemistry: Outtakes #4

Crash Course: Chemistry

<https://youtube.com/watch?v=icvR7FzzldM>

<https://nerdfighteria.info/v/icvR7FzzldM>

*(Intro Music)*

**Hank:** I'm glad I'm in the water it's hot! This is the Clark Fork River... there's another line after that, there's a lot more words after that. There's so many fish on my feet!

**Hank:** In Montana, where I live.. something!

**Hank:** So the Clark Fork's geochemistry explains why... crap. So the geochemistry of the Clark Fork explains why acid rain isn't as devastating here as it is in say the Atar- Ata-Atarackdackdack.

**Hank:** This is about buffers

**Hank:** Badudududududubububu.. dudududububudub!

**Hank:** I didn't see you point at me Nick!

*(Nick laughs)*

**Hank:** How do I know?

**Hank:** Did you point at me? Do it again. Point. Point more. That's creepy, that's too much.

**Hank:** Did you point at me?

**Nick:** No I was waiting for you to stop talking.

*(Hank laughs)*

**Hank:** That's not how it works. I talk forever, until you point.

**Hank:** Acid loses xm, and gains- and both ions gain x.. more x.

**Hank:** The symbol for this kind of equilibrium constant is ka for an acid or kb for a base.

**Hank:** A rate law in this form is said to be of the fourth order, we get that al- alu by adding valghs the fourth.. hard.

**Hank:** A rate law in this form is said to be of the fourth order, we get that by adding together the exponents..

*(Nick laughing)*

**Hank:** Shut up..

**Hank:** A rate law in this form is said to be of the fourth order, we get this value by adding together the exponents, three plus one, and adaxwehus four.

*(Nick laughing)*

**Hank:** Then solids like my table here or my phone, or m- this isn't a phone..

**Hank:** I missed a, missed a, missed just a couple of words there.

**Hank:** So use the equilibrium expression for acetic acid, and put it, put it in, put in, put in the ka and the equilibrium concentrations from the RICE table

**Hank:** So use the equilibrium expression for acetic acid, and put, p-, p-

**Hank:** So use the equilibrium expression for acetic acid and put it in the k, put in, put in, put in, put one no not it put in, put in

**Hank:** Your pacemaker, hopefully you don't have a pacemaker but if you do, that too, I don't know where I'm going.

**Hank:** Medium, glubleglah

**Nick:** Gledium.

**Hank:** And another part where there being and glugghh

**Hank:** Dudududchibghaka..

**Hank:** Eeeeeehhhh..

**Hank:** Which is why we call these things alkaline batteries

**Hank:** With a little algebra it's simplifi- simplifies? That doesn't look simpler. I guess you could call that simplified, but that's, ah I mean I could use the quadratic equation but that's, it sounds just terrible to me so, let's loshialuheua...

**Hank:** Heugh, that's like quadratic, I don't wanna do that. So here's a little trick to make this a lot easier. Hairs a little trick! Hairs a little trick!

**Hank:** -A rur, a rur a ru a random

*(Michael laughing)*

**Hank:** My finger itches. Why? Why do I hear it?

**Hank:** If it's so small that after rounding for significant digits it won't change our answer blphoo!

**Hank:** The rest of the problem cancels out leaving x to equal 1.75 times ten to the negative fifth.

**Michael:** It's not five, it's three.

**Hank:** Why did I say five?

**Michael:** (laughing) I don't know!

**Nick:** Three sir!

**Hank:** It said it right there!

**Hank:** The rest is a breeze, with a couple taps of the calculator we find that the ph is 7.45- it's not, it's not what it says..

**Hank:** The rest is a breeze, with a couple taps of the calculator we find that the ph is se-seveenn.. ahhhh! That was too much, I didn't know where the table was!

**Hank:** Is it too loud? Put your headphones back on. AEEAGHHH!

**Hank:** What if we tried the persshdebaa!

**Hank:** So badly that they can't driven anymore and the last driver of a car that continues to tch- drive.

**Hank:** Damaging your own car, and the last-

**Hank:** Every reaction has a minimum amount of- minimount! Minimumamount! Minimumamount! Minimumamount!

**Hank:** Every reaction has a minimum amount of energy- rrrreourequired.. to get it.. started..

**Hank:** Because it involves reactions that either produce, or consume react- plbphh!

**Hank:** I've told you about redox reaction before and if you haven't seen that episode yet, you should probably watch it before you watch this one..

**Hank:** Like for example, this kind of work! Uoorgh! It's not mine, I don't wanna break it.

**Hank:** Well it's kinetic energy, the kind that comes from a particle's speed- it's actually the literal speed of the atom. So just like cars and demolition derby, all else-

*(Nick laughing)*

**Hank:** What?

**Nick:** That didn't work *at all*.

**Hank:** Like if you keep smashing the back of a guy's trunk, you're not gonna stop his car from going.. cause there's no engine back there..



## Crash Course Chemistry: Outtakes #4

Crash Course: Chemistry

<https://youtube.com/watch?v=icvR7FzzldM>

<https://nerdfighteria.info/v/icvR7FzzldM>

**Hank:** We find that the rate of the reaction is 0.012 mol- moles.. that's not very many moles! It's hard to have really 0.012 moles.

**Hank:** Equilibrium expressions are also used - oh blphh!

**Hank:** Equilibrium expressions also used bracketed concentrations with exponents and that's no accident, the- those- beh- the- thee!

**Hank:** Now if you've watched out episode on equilibrium this formula should w-wook..

**Hank:** Now if you've watched out episode on equilibrium you should blpphhhhhh..

*(Nick laughing)*

**Hank:** No idea what I just said! I'm sure that the graphics will make it clear.

**Hank:** Of their electrons, their chemical bonds, and their intermerrrr..

**Hank:** Like foams and gels and colloids like mayonnaise and rubber waxes and some biological tissues such as fat!

**Michael:** Ooooooooooh

**Hank:** Zzzzzoooozoooo

**Hank:** Resu- reszzzzzz.. zzzzzoooozzoozzz.. zz!

**Hank:** In order to do it right, you have to type- tep tuptupitap! Baptipbtabab!

**Hank:** Moleculer ... like, mol-e-q-ler ... that makes sense?

**Hank:** Atomic sollage, like the name.. sollage? Sollage?

**Hank:** I don't want to say it now except tubdubtibow but it's some ggurshbow..

**Hank:** The diamond in this ring- aaaahhhhhh..

**Hank:** Fascinatingly enough only a few minor differences in an atomic arrangement allow an element found on.. the.. bottom..

**Hank:** Once you learn the chemistry of these different netics-netics?

**Hank:** Both of these properties make ceramics useful in tonnes of ways which you've probably been exploring.. when you were a toddler.. and got your first box of modelling clay.

**Hank:** Now if each of these half reactions occurred within contact of the other they'd spontaneously got to equilibrium and-

**Hank:** Release beglagrableghraba! Br- breleasing! Breleasing a bunch of blenergy!

**Hank:** Thanks for watching this episode of Crash Course Chemistry, if you were listening that avaca-avaconventional? Avacontential.

**Nick:** That's a great word.

**Hank:** I don't think it's a word though?

**Nick:** It is now!

You learn that electrochemical reaction are aaaah- aaauhaaaa..

**Hank:** The script supervisor wasn't here, and Michael Aranda is our sound designer.

**Hank:** Like how Bohr figured out his model or Heisenberg used

math to usher in qu-

**Hank:** Combustion, halogenation and dehydrananation.

**Nick:** Ooooooooohhh

**Hank:** And Michael Aranda- Aranda?

**Michael:** Aranda?

**Hank:** Aranda?

**Hank:** This episode was written by ED Gonzales and edited by Blake DP- deep eee- de Pastino..

**Hank:** Our script supervisor was Michael Aranda. He was also our graphic designer - graphic designer, apparently.

**Hank:** The script supervisor was Mmmmmmmichael Aranda.

**Hank:** Our scriulaaaaaalalaa! Why? This is the easy part!

**Hank:** And finally, you learned that chemical reactions actually happen in steps, that the slowest step determines the overall rate of the reaction, and that the- reeeeeeeason for thaaaaaat!

**Hank:** You've also learned that I should have the teleprompter going faster..

**Hank:** You also heard some of the properties of these solids-lelelalalalalala!

**Hank:** And diamond, are network- dah! Heuh! Heuuuuuh!

**Hank:** You learned that both diamond and graphite are both network solids made up of sure carbon atoms, but, but, butbutbutbutbu, but but but butbutbut butbu but but!

**Michael:** Goodnight everybody!