

Sequence 6: radioactivity



Fiche de synthèse mobilisée (collection en français) :

Fiche 6: radioactivité



Sommaire des activités ETLV :

ACTIVITY 1: radioactivity

ACTIVITY 2: nuclear power

ACTIVITY 3: nuclear power taboo game

ACTIVITY 1: radioactivity

Objective: listening to a recording to acquire vocabulary on radioactivity

Discovering vocabulary

DOCUMENT 1: radioactivity

Listen to the recording available on the website: radioactivity.mp3

Source: The Naked Scientists https://www.thenakedscientists.com/science-podcasts

Propose a definition or translation if needs be of the following words:

English	French
an isotope	
to wiz around	
to wonder off	
unstable	
to break apart	
to release a lot of energy	
radioactive decay	
to deflect	



Fill in the blanks

Listen to the recording once or twice, then fill in the blanks: Atoms consist of three types of particles so going from the outside in: you have tiny negatively charged particles called __ which wiz around a _____ made of _____ which have a positive charge and _____ which don't have any charge. All of the atoms with the same number of ______ belong to the same element. So, what keeps all these particles (atoms) together? Normally, an atom has no charge over all, so the number of protons is same as the number of _____. What about the number of neutrons? Well, you can actually change the number of neutrons in an atom, and although this doesn't make much difference to the chemistry, it changes the mass slightly, so we say it's the same element but a different _____ of that element. For example, a hydrogen atom always has one proton and one electron but it could have one or two neutrons or more normally, none. So, if the number of neutrons doesn't affect the chemistry, what does it do? Well, it can affect whether the nucleus is _____ or not. The nucleus of a radioactive element is _____ and it can _____, releasing a lot of energy as it does. We call that ______. And the energy can come out in a few different ways. Either as _____ or ____ or as _____ or as _____ And what's the difference between those different types of radiation? OK, alpha particles are the _____ of helium atoms, which have no electron; beta particles are very fast moving __ and gamma rays are high frequency, ___ And that's a type of light. Alpha particles are positively charged and you can _____ them using an _____ or electromagnetic ______. Beta particles are _____ and so you can deflect them in the other direction. Rephrasing Listen to the recording again, use the keywords to help you understand. Write a short summary of the mp3, and then explain it to the class. **ACTIVITY 2: nuclear power** Objective: increasing your knowledge on nuclear power **DOCUMENT 1: nuclear power** Listen to the recording available on the website: nuclear_power.mp3 Source: The Naked Scientists https://www.thenakedscientists.com/science-podcasts



Propose a definition or translation if needs be of the following words:

English	French
the nucleus/nuclei of an atom/atoms	
nuclear fission	
nuclear fusion	
splitting things up = breaking up	
this process releases a huge amount of energy	
to run a power station	
to trigger	
two halves of the nucleus	
to repel	
to fly apart incredibly fast	
to spit out neutrons	
presumably	
to split	
in turn	
a chain reaction	
a nuclear reactor	
to be designed	
a rate of reaction	
a nuclear explosion	
to extract energy	

■ Fill in the blanks

Listen to the recording once or twice, then fill in the blanks

So, Dave what is the basis of nuclear power?			
It's a way of energy from the of atoms. An atom's nucleus is the dense part of the centre of an			
atom. Made up of protons and neutrons and surrounded by a cloud of electrons. You can get energy from atomic nuclei			
in two main ways: nuclear and nuclear			
OK let's look at the first of those: how does nuclear work then?			
is another word for things It involves up the of large elements such as			
uranium and plutonium to form much smaller ones. This process a huge amount of energy in the form of			
; which you can then use to run a			
But how do you make the large atoms split up in the first place, to release energy like that?			
First you have to pick an atom, which is in the right way such as or plutonium 239. If a			
hits the nucleus of one of these atoms, it can the atom to split in two. This releases a			



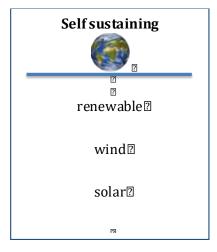
of	because the two	of the nucleus	are both positive	ly charged. They	and
	fast.				
As well as the 2 halves	of the nucleus, these atom	ns also	_ 2 or 3 more neutr	rons.	
And those neutrons	can then make oth	ner atoms split?			
Yes, if they hit another	nucleus, they can. So one	atom that	_ can release anotl	her neutron to split an	other 2 or
3 Which can each release another 2,3 neutrons. So, in each generation, more and more atoms will split and					
release energy. We call	this a	_•			
And will that keep goin	g forever?				
Ai	is very carefully	so you only get a ce	rtain of	, no more. But if y	ou design
the system in a different way then a chain reaction can get bigger and bigger and bigger and an immense amount of					
energy's released very	quickly. This is a nuclear _	•			

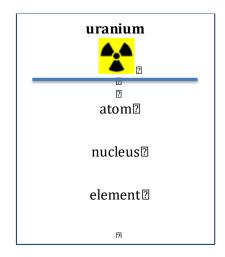


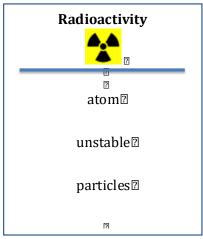
ACTIVITY 3: nuclear power taboo game

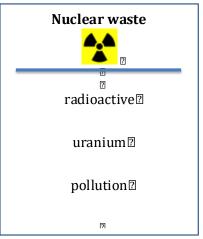
Objective: to reinvest vocabulary

Each student gets to pick a card in turn. The rest of the class does not get to see the card. The student tries to make the class guess his/her card without saying the three forbidden words written below.

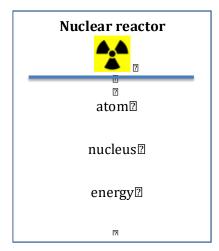


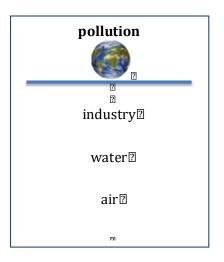






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Activity summary

What you must remember:

- isotope
- half-life
- radioactivity
- a chain reaction

Skills linked to the curriculum:

Compétences	Capacités à maîtriser	Où dans cette séquence ?
APP	Utiliser du vocabulaire spécifique	Activités 1 à 3
APP	Lire et comprendre des documents scientifiques	Activités 1 et 2
СОМ	S'exprimer à l'écrit et à l'oral en utilisant le vocabulaire adapté	Activités 1 à 3