9 SCIENCE CHEMISTRY ASSIGNMENT: URANIUM 2016

Name:		Teacher: Due date: 4pm Wednesday 6 th April
MAR	KING	KEY
Aim: This assignment is based on the de		
alamants Dr. Muller emharks on an en	ic iourney across the g	ranium, one of the Earth's most controversial lobe to explain the fascinating details of r, uranium has brought hope, progress and
Video: Uranium: Twisting the Dragon's http://www.dailymotion.com/video/x3	Tail Part 2: 54:53min 31jrpz	
Plagiarism: You must write in your own words not source. Plagiarising = instant zero on assignme		for word from another student or another re-do it.
Assessment policy: Give me a sick note/legitimate reason One day late = -20% taken off mark Two days late = -40% taken off mark Three days late = mark of zero given After three days, students are require		ue date = new negotiated due date. n and are still required to submit the assignment
	nt school the day ease email it to n	this assignment is due, ne by 4pm.
		_@aranmore.wa.edu.au

MARKING KET

Chernobyl disaster

1. On what date did America drop a uranium bomb on the city of Hiroshima, Japan?	(1 mark)
6 August 1945	
2. On what date did America drop a uranium bomb on the city of Nagasaki, Japan?	(1 mark)
9 August 1945	
3. On what date did the Chernobyl disaster occur?	(1 mark)
26 April 1986	
One of the atomic reactors was damaged and radiation was released across Europe. Soldier smother the reactor and the Chernobyl firemen were the first on the scene. They were then where they eventually died. The city and countryside around the reactor remains an abando zone: The Chernobyl Exclusion Zone, Ukraine. Medical physicist who works in nuclear medicine (Bionerd to the exclusion zone a number of times before, traveled with Muller to the Chernobyl Exclusion Zone.	ned exclusion and who has been
4. What is the device called that detects radiation? (reige Counter	(1 mark)
Verge: Voor	
5. What is radiation measured in?	(1 mark)
Microsieverts	
6. Describe what natural background radiation is and state what amount it is on average partial background radiation is the level of	
radiation that naturally occurs on Ear-	th. (1)
The amount of natural background radi	ation
is on average 0.2 microsieverts per ho	our.(1)

Bionerd and Dr Derrek Mull Visitors are allowed into the	er visit <u>Pripyat</u> town but only for	an aband brief periods	oned town in a	the Chernoby ernight. About	Exclusion Zoi 50 000 peopl	ne. e lived
	.1	unt and thoir to	amiliac			
here, mostly workers at the Nuclear reactors split urani which is how they generate when the Chernobyl reacto					releases he aller fragment	ts and
The coating of smashed ura are really dangerous, even The radiation is	lethal.		y over the city 't feel it, you c			s, which
Bionerd and Dr Derrek Mul firemen were taken after to reactors. Their clothing wa the basement may be 1000 radiation, which is danger coverings and masks. They the radiation. The main ra- particular fragment of spli	ler explored the ho hey fought the fires s still in the basem OO times the nature ous and why they u did not want to br diation in the hosp	s at the Cherno ent. Radiation al background ised protective reath in or ingo ital was from (obyl in e est one			
8. Caesium-137 is a radiois	otope of caesium.	Explain what	this means (m	inimum of th	ree sentences) (3 marks)
Caesium-137 is	s an isot	ope of	caesiur	n, thi	s mean	21
it has a di	Eferent 1	umber	of neu-	trons in	its no	cleus.
Cansilina - 13	J is Un	stable	(1) and	d has	a nucl	evs .
_ that may un _ at any tin	dergo the	process	of nu	clear (eaction	
—at any tin	ne.	_				
9. Fill in the table below	comparing caesiun	n and caesium	-137.			(10 marks
Substance	Symbol	Atomic number	Number of protons	Number of neutrons	Number of electrons	
Caesium	(, ()	55 (I	55(1)	78 (1)	55 (I)	

7. Fill in the missing words below.

Caesium-137

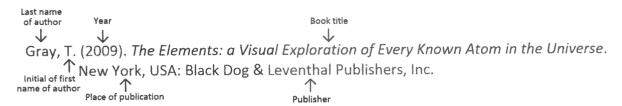
(5 marks)

$_{\odot}$. Explain why receiving your dose of radiation all at once is much worse than having it sprearyear (in full sentences).	nd throughout the (1 mark)
Over a full year, your body has time to	
repair any damage.	
11 List two (2) biological effects of being exposed to high doses of radiation.	(2 marks)
-Danages your immune system.	
- Danages DNA. (Dmark each)	
- cells stop functioning.	
Half-life	
11. In your own words, explain what 'half-life' refers to (minimum of two sentences).	(2 marks)
Half-life refers to the rate at which	
radioactive atoms decay. It is the time	
that it takes for half of a substance's	
radioactive atoms to decay. (1)	
13. What is the half-life of caesium-137?	(1 mark)
30 years.	
1կ. What is the half-life of uranium-238?	(1 mark)
4.5 billion years	
15a. State the name given to the confinement structure that encases the damaged nuclea	r reactor. (1 mark)
Sarcophagus.	

Bionerd and Dr Derrek Muller stayed in the basement for only four minutes but that was enough. If they stayed

b. Explain why the new confinement structure is only a temporary solution (minimum of two sentences). (2 marks)
The half-life of uranium-238 is 4,5 billion (1)
years which means that a new confinement
structure, which may only last 100 years will
Keep needing to be replaced.
15. It's been about 30 years since the Chernobyl accident. Explain why people will not be able to live in Pripyat, Ukraine for hundreds of years (minimum of two sentences). (2 marks)
Radiation is still being released because only (1)
half of the radioactive atoms have decayed.
This means that the area is still dangerous.
Medical use
Australia's one and only nuclear reactor is housed at the Australian Nuclear Science and Technology Organisation in Sydney. This is not a power reactor but a research reactor where they create medicine and technology. Highly radioactive technetium-99m was injected into Jason Batson which acts as a radioactive tracer. The machine detects the gamma rays and makes a picture of them as technetium-99m gathers where there are fast growing cells.
17 . State the name given to the type of scan that Jason had and describe the purpose of Jason having this scan. (2 marks)
Positron emission tonography / PET scan. ()
The purpose of this scan is to determine if
there are any cancerous tumours in his body. O
16. State the half-life of technetium-99m. (1 mark)
6 hours

Book



Book with two authors

Shermer, M., & Benjamin, A. (2006). Secrets of Mental Math: The Mathemagician's Guide to Lightning Calculation and Amazing Mental Math Tricks. New York, USA: Three Rivers Press.

Book with three or more authors

Bulliet, R. W., Alley, R. B., Broecker, W. S., & Denton, G. H. (2011). *The fate of Greenland: Lessons from abrupt climate change*. Cambridge, MA: MIT Press.

Book with editor

Kasdorf, W. E. (Ed). (2003). *The Columbia guide to digital publishing*. New York, USA: Columbia University Press.

Website



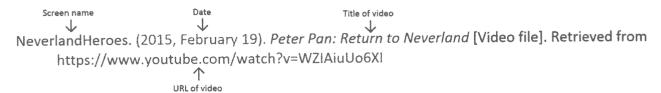
Website with no author (put title of page at the front)

Aranmore Catholic College. (2014). Retrieved from http://www.aranmore.wa.edu.au/

Website with no date

The Zadkine Museum. (n.d). Retrieved http://www.france.fr/en/museums/zadkine-museum.html

Video file



Reference list

Minimum of two references.			(1 mark)	
Referenced using the APA style shown on the previous page.			(1 mark)	
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Assignment is neatly written or typed.			(1 mark)	
Correct grammar and spelling.			(1 mark)	
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Total mark:	/44	%		
Teacher comments:				
2				