

Item	Page #	Comment
1	3	Victorian house - will have to later define ways that facility conforms with construction requirements for biosafety such as pressure decay testing of materials, air balance and HEPA filtration of exhaust, etc.
2	6	The implication that a missing aliquot of a deadly virus would put the people actually in space suits themselves in immediate danger is inconsistent with why the suits are worn to begin with. There would be a bigger risk outside the lab. While this could be a fair question to be asking someone, there should be something in the text that indicates that the facilities / security person understands that this is a less likely scenario. If Jenny is the perpetrator, then she would not likely be admitting that she had a fever.
3	6	might want to indicate that the air exhaust is through double HEPA filters
4	8	the timing that earlier is suggested as three weeks now sounds like two weeks, which I suspect you would want to be fairly precise about if you are trying to make some case about the incubation period. I understand also the possibility that you may want to keep it vague. The computer log would also have a precise indication as to when the 2-person team last logged in together.
5	9	suggestion here is that the security supervisor, in what appears to be a small company, with an even smaller workforce going into highly hazardous, secure facility, does not know the people.
6	14	The medical isolation stretcher would more likely be of a design where the patient is slid through a porthole at either the top or bottom side of the stretcher. I can send a picture of what this looks like. I do not know of a design where there is a tent. The type that we used is manufactured by Elwyn Roberts in Shropshire, U.K. Their website is <a href="http://www.isolateit.com/home.htm">http://www.isolateit.com/home.htm</a>
7	14	The team would have performed some type of decontamination of their outer surfaces before ever getting into the vehicle. Otherwise, the vehicle is now contaminated. This would have happened no matter what the condition of the patient was because to ignore this would only create the possibility of a much larger public health crisis
8	15	rather than a furnace, you may want to call it a medical incinerator
9	15	the highly hazardous viruses that you are generally referring to typically have an outer membrane that is composed of lipids (fats) from the cell membrane and viral proteins inserted into the membrane (referred to as glycoproteins). Coagulation of the proteins by the decontaminants is generally less of a mode of action than stripping away the cell membrane to inactivate these types of viruses via a detergent action, or oxidizing the proteins with caustic materials.
10	15	The nucleic acid of hemorrhagic fever viruses are RNA-based.
11	17	How does the lab tech sneak a rabbit out ?
12	26	Why would someone who had earlier been working as a law enforcement officer be put in charge of the facilities ? That is generally a job for someone with an engineering or facilities maintenance background, especially for a biocontainment facility.
13	27	Since you have identified it as Ebola, then all of the items that I indicated above with respect to the virus are accurate. Ebola is a negative stranded RNA virus with a lipid membrane - glycoprotein outer envelope.
14	29	Should change name from "Osborne" to "Ross"
15	31	Under procedures that would have been in place in our biocontainment facility, if something like this had happened, we would have notified the boss immediately. Why would Toni not be instantly on the phone with the owner, if she had no qualms about calling all other types of employees during the early morning hours ?

16 31 Someone would have also brought the rabbit back to the lab as well. If the rabbit was  
dead, one would assume that it too had experienced a hemorrhagic episode and would  
be easily identified as having been infected.  
17 32 Good response from the owner - these would have been accurate

18 38 Unfortunately, there are no rabbit models for Ebola viruses or Ebola-like viruses.  
Rabbits would not normally be used for this. The only animal models that currently  
exist are monkeys and mice. The virus that is used for mice had to be specially  
adapted through serial passage in baby mice, then older mice. If you want this to be  
scientifically credible, you will somehow have to build into your novel that their  
scientists had spent quite some time developing a rabbit model for the virus. This can  
also be part of the demonstration that this biotech company was very good at what  
they do - novel lethal rabbit model in addition to the anti-viral drug.

19 39 The actual act of aerosol challenge of animals involves placing the animals into a  
specialized aerosol hood line. This type of line is air-tight and the animals are  
generally exposed either to whole body aerosol, or to a head only aerosol. For the  
purposes here, you may want to say something like "the rabbits were subjected to the  
virus in a specialized aerosol generation cabinet, exposing their heads only to the  
microscopic mist of lethal virus"

20 40 I do not know of any beagles currently being used in filovirus (Ebola) research. Of  
course, these dogs may be associated with some other type of work not specific to the  
fictional virus Madoba-2

21 41 The described technology of having a canister with a filovirus ready to aerosolize  
would also be very, very different from any current technology. All aerosol experiments  
these days involve very precise delivery techniques that take place inside specialized  
cabinets called Class III (aerosol hood lines). The virus must be prepared in a liquid  
form and then sprayed. Viruses such as Ebola must be maintained for long term  
storage at -70 C or greater, so just taking a canister from a cabinet and spraying like a  
hairspray would be quite novel (I am not sure that such a device would be possible -  
but this is fictional).

22 53 I am not aware of any drug testing for filoviruses taking place at the CDC. Most  
current drug testing on Ebola is done at the U.S. Army Medical Research Institute of  
Infectious Diseases. CDC has done some work on transfer of antibodies to evaluate  
protection, and worked on vaccine development, as has USAMRIID

23 59 I am not familiar with the word whinger - is this another spelling of whiner ?

24 71 AIDS should be all capitals since it is an acronym. Might want to say " three million  
people died of AIDS, which is caused by a human immunodeficiency virus".

25 72 Again, AIDS needs capitalization. May want to say "before AIDS and influenza, the  
great virus-caused killer was smallpox". Also, the Chinese used a form of vaccination,  
called variolation, actually using smallpox virus, well before Jenner's discovery. Jenner  
identified that a different virus, cowpox, could be used to prevent smallpox.

26 72 Would be better to say "A virus cannot reproduce itself - instead, it hijacks the  
biochemical machinery of a living cell....." The difference being that virus do not  
specifically use host DNA, but use host proteins (along with their own) and the host's  
basic molecular building blocks inside the cell (like the nucleotides that make up DNA  
and RNA) to replicate.

27 75 Good coverage for the host range of the fictional virus, although it might be better to switch chimpanzees to rhesus macaques. Also, good to see that there is a mention that this is in a specific "type" of rabbit. That would work well with earlier comment #18 if the lab identified a new rabbit model for the Madoba virus

28 103 change "limbed" to "climbed"

29 125 Chapter Labelled 4 p.m. is repeated - pages 116 to 124 are identical to pages 125 to 133

30 180 Typo for spelling of Nigel's name

31 188 Technically the antechamber before the actual suite is not BSL-4, but this is a very minor point. You could just say "as he entered the antechamber to the BSL-4 laboratory"

32 189 Good - you accurately portrayed the exit process, it is generally a release button.

33 201 Just confirming that this is an accurate estimate of the required time to get into the suits.

34 201 At USAMRIID, we do not use disposable underwear, but do wear something akin to a loose fitting surgical suit, comprised of a loose fitting top with snaps down the front and elasticized cuffs, and a loose fitting set of pants with a drawstring. There is no need for leather gloves if you are not specifically going to be working with the animals in the animal holding rooms. What generally happens is that you are wearing a set of surgical gloves as the first layer, and then a second set of slightly heavier gloves, like a butyl plastic on the outside that have to be taped to the suit. The leather gloves for handling animals would stay inside the suite, and just be taken off and stored there until next needed by the animal caretaker. Leather does not do well in an autoclave, which would be the way that the gloves would need to be decontaminated. So, the process of just wearing street clothes is going to work, as long as you have the gloves in place. This will keep the positive pressure gradient inside the suit in place.

35 202 To the best of my knowledge, there are no suits used in BSL-4 suits that have an air filter per se built into them. Another design that does not require use of the air lines is to have a PAPR (power air purifying respirator), however, these are belt mounted, or self contained in a hood that is separate from the suit. The suit that you see in the picture is a proper one piece suit. This allows for positive air pressure to be maintained.

36 202 Proper exit procedures is first to shower with a decontamination solution (generally a quaternary ammonium compound solution - but that is obviously too much detail). You pull a chain and the shower starts with a spray that comes from every direction. After that you do a rinse with plain water to get rid of the chemical. There is no need for a water first shower since you are trying immediately to decontaminate the suit. There may also be a vessel with extra decon solution and a brush for doing your boots. The system is set up to run for a predetermined time, like a car wash, to ensure that you have done an adequate amount of contact time with the decon solution.

37 202 Of course, if you come into contact with the outside surface of the suit, and it is contaminated with live virus and if then you rub an eye, put your fingers in your nose, or have an open wound, you stand a chance of infecting yourself.

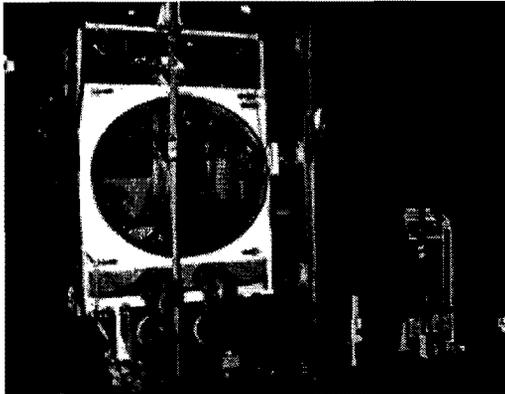
38 203 If Madoba-2 is an Ebola virus, and since the infectious dose for Ebola is likely less than several hundred virus particles, then it would be very likely that the "aerosol container" would have hundreds to thousands of human infectious doses.

39 203 I would say the following "Nigel turned off the UV light source that sterilized the interior of the cabinet and switched on the motor that created a protective curtain of downdraft air against the interior glass pane of the cabinet. He put the sample boxes into the cabinet, and delicately tipped a dozen clear plastic tubes out of each."

40 204 The act of pouring the virus into the spray gun indicates that the material is stored in liquid form - so earlier comments about the virus being an aerosol are not consistent. Secondly, this will create an aerosol that is going to contaminate the outside of the plastic spray device. Unless the outside surface of the device is wiped down with a disinfectant, it will be too hazardous to handle once it is taken outside. Finally, the materials will need to be kept cold at least, although in blood specimens, Ebola virus can stay stable at room temperature for several weeks.

41 208 Typo for BSL4

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<http://www.hc-sc.gc.ca/pphb-dgspp/msds-ftss/msds53e.html>