

Heavy Ion Alert's Response to the Control Committees

In response to the reply received from the Control Committees, Heavy Ion Alert would like to make the following points:

The Control Committees should read the arguments in a submission before replying to it

The Control Committees of the Swiss Federal Assembly play an essential role in ensuring that the Federal Administration is accountable to the Swiss people. It is encouraging that the Committees call upon citizens to inform them of deficiencies in the functioning of the Swiss Government [1]. It is unlikely, however, that these committees will be able to fulfil their role if they do not read the most important parts of the submissions they receive. The first three pages of Heavy Ion Alert's submission [2] to the Committees describe in detail the issue of possible strangelet production at the LHC. Not once in the whole submission are black holes specifically mentioned – though of course the risks related to this are also in need of independent review. Yet, the reply from the Control Committees [3] refers only to 'tiny black holes', and makes no mention at all of strangelets.

The Control Committees should examine the role of the State Secretariat for Education, Research and Innovation

The reply from the Committees states that CERN is not under their supervision. While it is true that CERN is not under their direct supervision, the State Secretariat for Education, Research and Innovation (SERI), which handles the Federal Government's funding and participation in CERN [4,5], is most certainly under the supervision of the Control Committees. What the Control Committees need to examine is how the Secretariat could contribute hundreds of millions of Swiss francs to a major international project without verifying that it would be safe for both Switzerland and the world.

The Control Committees should investigate why the Government did not notice that LHC safety arguments are contradicted by CERN scientists

The need for a review of this case is highlighted by the insecure nature of the current safety arguments for the LHC – given the various clear contradictions between CERN's official safety assurances and the independent statements of its scientists. This regards the likely production of strangelets; the possible production of negative strangelets; the stability of small strangelets; the existence of experimental evidence for strangelets etc., which were discovered and documented by Heavy Ion Alert [6] through a straightforward review of the relevant scientific literature – a standard procedure that should be expected of any government agency involved in such a project. The fact that the Government is unaware of these issues – or is denying awareness of them – strongly suggests that there is no effective system of regulation within the State Secretariat responsible for Swiss participation in the LHC.

The Federal Council's failure to recognize clear conflicts of interest is a matter of serious concern

With respect to the Federal Council's statement that the LHC Safety Assessment Group (LSAG) is composed of CERN-independent experts [7], the Control Committees assert that, 'There is no documented evidence whatsoever that the Federal Council had intentionally misinformed the Federal Assembly' [3]. The Control Committees do not

indicate whether they had actually used their investigative powers to verify this claim, but even if it is true, it is perhaps even more shocking that the Federal Council could not recognize the glaring conflicts of interest of the LSAG members [2,8]. If the Federal Council was not able to tell, for example, that such a prominent representative of CERN as Professor John Ellis [9-15] is not a 'CERN-independent expert', then it seems that the Council is far too easily fooled on such matters. Clearly, there was no justification at all for claiming that LSAG members were 'CERN-independent experts'.

There were no grounds to justify CERN staff drafting an 'independent' safety report

Regarding the Control Committees' suggestion that perhaps it was appropriate for CERN to be responsible for updating the 2003 safety report 'in the light of new experimental results collected at CERN' [3], we would point out that no relevant experimental results were collected at CERN itself during this period. The new experimental results which the LSAG report refers to took place over 6000 km away at the Relativistic Heavy Ion Collider (RHIC) in Long Island, New York [16]. Those results were all publicly available, so there was no special reason to involve CERN scientists in the process.

The conflicts of interest in this case should be considered a major scandal

As quoted in our original submission, law professor Eric E. Johnson argues that:

It is remarkable to think for a moment how CERN's situation might be viewed if, instead of operating a particle accelerator, CERN was a developer of pharmaceuticals. If a pharmaceutical firm attempted to take a drug to market based on the safety assessment of a panel of five of its employees, who in turn relied on the scientific work of one employee and one other scientist with a pending visiting position with the firm—it would be a scandal of epic proportions. [17]

Do the Control Committees truly believe that this issue, one which involves the safety not only of Switzerland, but of the whole world, is not a scandal worthy of their attention?

The Government should be careful upon whom it relies for its information

An important systemic issue related to the Federal Government's participation in CERN and other international collaborations is the question of who the Government relies on for its information. For many projects, the Government appoints an individual from the relevant department to serve on the project's governing board. As a member of the board, that individual participates in the decision-making process and may, over time, develop a sense of loyalty to the project and pride in their own involvement. Problems can arise, however, when a governing board reaches a collective decision on a controversial issue. Can the individual that the Government had appointed be relied on for a complete and unbiased briefing on the matter, or will his or her report be slanted in favour of the collective decision? Does the Government rely on only that person for its information, or is there a robust procedure to independently verify his or her input? For example, when the Federal Council told the Federal Assembly that, 'CERN Council also regards it as absolutely essential to accurately understand the possible risks involved in the operation of the LHC' [7], was it because the Federal Council had objectively determined that this was CERN's strong moral position, or was the Federal Council simply repeating the words of a CERN Council member?

To see that this is not a purely theoretical concern, consider the following claim made by a member of CERN's Council prior to the start-up of the LHC. Dr Jean-Pierre Ruder was at that time the head of Multilateral Research Cooperation in the State Secretariat for

Education and Research (the predecessor of SERI) [18,19] and had for several years been one of the Swiss representatives on CERN's Council [20,21]. To reassure the Swiss public about the safety of the LHC, Dr Ruder apparently informed Blick.ch that an independent commission of scientists from around the world had recalculated CERN's calculations three times forwards and backwards [19]. In reality, there has never been an independent commission that has verified CERN's safety arguments for the LHC. At best, Dr Ruder was referring to the Scientific Policy Committee (SPC) of CERN, which for the purpose of claiming some independence in the LHC's review process, CERN had been trying to bill as an independent body [22]. The SPC is, in fact, a subsidiary body of CERN's Council [23] and an integral part of the management structure of the organization. In the very same session of Council in which the SPC presented its oral briefing about the safety of the LHC, it also presented and received unanimous approval for its draft budget for CERN for 2009 and its medium-term plan for the organization for 2009–2013 [24,25]. By no stretch of the imagination can the SPC be considered an 'independent commission' in relation to the LHC or any other activity of CERN – a fact that any member of CERN's Council would know. If a Council member could wilfully mislead the Swiss public about the independence of the safety review process for the LHC, what would stop him or her from also trying to mislead the Swiss public's representatives sitting in the Federal Assembly?

The personal interests of Swiss delegates to CERN's Council should be thoroughly investigated

A further issue of concern is the possibility that personal interests influenced the judgement and conduct of the Swiss representatives on CERN's Council. At the time of the approval of the LSAG report, the two Swiss representatives on the Council were Professor Ulrich Straumann from the University of Zürich [26] and the previously mentioned Dr Jean-Pierre Ruder from the State Secretariat [21]. Within a fortnight of the Council's approval of the LSAG's flawed safety report, Professor Straumann and Dr Ruder began their terms as 'Project Leader' and 'Project Administrator', respectively, of a new multimillion-CHF project entitled, 'C-15 Swiss Centre of Advanced Studies in Particle Physics in the LHC Era' [27-29]. Since this project was predicated on there being an 'LHC Era', one can naturally wonder whether they had put their personal interests ahead of their country and the world in giving a green light to the LHC on the basis of a suspect safety report. This is an important conflict of interest which the Control Committees should thoroughly investigate.

The Government cannot allow the academic community to take all the responsibility for identifying potential risks of research projects

A broader systemic issue is the degree to which the Federal Government is leaving it for the academic community to flag up potential safety concerns regarding the LHC or other scientific experiments. As noted in Heavy Ion Alert's submission to the Control Committees, in a December 2007 edition of 'CMS Times' (the newsletter of the LHC's 'Compact Muon Solenoid' collaboration), a scientist with the CASTOR detector plainly stated that strangelets 'are likely to be produced' in heavy ion collisions at the LHC [30]. Less than seven months later, however, the official safety report for the LHC claimed that it is practically impossible to produce strangelets in heavy ion collisions at LHC energies [31]. As a specific example, it calculated that even if the LHC were to run for the entire lifetime of the Universe, the chances of it producing a single $A=10$ strangelet (i.e. a strangelet with a mass of approximately 10 protons) would be less than one in a thousand. At no point did the official safety report even mention that there was, and still is, a specialized detector dedicated to observing strangelets produced at the LHC [32]. Thus far, no scientist associated with CERN, CMS, or any of the other LHC experiments has publicly called for CERN to reconcile these contradictory positions. Moreover, to the best

of our knowledge, not a single member of the worldwide particle physics community has dared to raise this issue in a public forum. The State Secretary for SERI has stated that his Department gives 'great importance . . . to ensuring the autonomy and direct responsibility' of researchers, and that, 'for the most part, policy makers do not interfere with academic activities' [33]. While such an approach may be politically convenient, this case demonstrates that this policy is wholly inadequate for regulating the potential risks of unprecedented experiments.

An effective regulatory system is needed for unprecedented experiments

The Control Committees concluded their reply with the assertion that none of our allegations 'constitutes a systemic problem which would justify an intervention of parliamentary supervision' [3]. In this letter, however, we have so far provided evidence of several major systemic problems. Another such critical systemic problem is the lack of a regulatory system for extreme and unprecedented events. While a myriad of aspects of everyday life are subject to a well-defined and sometimes onerous regulatory regime, there is a gaping hole when it comes to the regulation of potentially catastrophic situations. For example, the official environmental impact study for the LHC devotes over 14 pages to analysing the visual consequences of LHC-related buildings, but not one to assessing the potential risks associated with producing new forms of matter [34]. The two safety reports subsequently produced by CERN [35,8] were not actually prepared as part of any official regulatory framework and were not subject to a process of formal external review involving public consultations. Rather, they appear to have been produced in order to fit with CERN's public relations strategy to ensure the unimpeded start-up of the LHC [22]. Developing a reliable framework for avoiding potentially catastrophic or existential risks is urgently needed not only for the LHC, but also for other areas of scientific research and experimentation.

A special effort must be made for the regulation of international projects

This challenge is even more pressing when it comes to regulating international research projects. However inadequate the framework to avoid these risks may be at a national level, such protection is reduced to practically nothing at the international level. As mentioned in our submission, Heavy Ion Alert had been informed by the U.S. Department of Energy that, 'After a detailed application process, operation of the LHC has been approved by the nuclear regulatory authorities of the host countries, Switzerland and France' [2]. Other countries have also assumed that Switzerland, the primary host of CERN, has conscientiously taken all possible measures to ensure the safety of the LHC and other CERN experiments. Furthermore, it is stated in Article 26 of the Switzerland-CERN Treaty : 'Nothing in the present Agreement shall affect the right of the Swiss Federal Council to take the precautions necessary for the security of Switzerland' [36]. On the other hand, the Federal Council has explicitly told the Federal Assembly that Switzerland incurs no international liability for the actions or omissions of the organization, and CERN itself is responsible for any damage it might cause [37]. We are left, then, with a situation in which it appears that no elected official has accepted any direct responsibility for the potential risks of the LHC. This situation is a threat to everyone, and must be addressed as soon as possible.

The Control Committees' initiative to evaluate the independence of regulatory and supervisory bodies should be expanded to cover the issues we have raised

On a positive note, we very much welcome the recent decision of the Control Committees to evaluate the independence of Swiss regulatory and supervisory bodies [38]. This is definitely a step in the right direction. However, it appears that this investigation is limited to assessing the independence of bodies that presently exist, and it will not examine situations where there is effectively no regulatory structure at all. As described above, for the catastrophic risks potentially associated with certain international experiments, this is a particularly acute problem. We would urge the Control Committees to help address this gap by formally investigating the issues that Heavy Ion Alert has brought to their attention.

The Federal Assembly and the Federal Council should commission a truly independent and interdisciplinary panel of experts to examine the safety arguments for the LHC

Finally, we call upon both the Federal Assembly and the Federal Council to establish a robust regulatory framework for the LHC. It is of no benefit to the Swiss people or the rest of humanity to say that Switzerland is not liable for any damage caused by CERN. Switzerland retains an undeniable obligation to ensure that experiments at CERN do not endanger its citizens or the planet. That obligation cannot be fulfilled without first addressing the documented flaws [6] in the current safety report for the LHC. We strongly urge the Federal Assembly and the Federal Council to commission a truly independent and interdisciplinary panel of experts [39] which, along with a remit to consider LHC safety critical submissions from the public, would closely examine the existing safety arguments that support operation of the LHC. The LHC programme of high-energy collisions should only be permitted to recommence if this panel finds that those arguments are rigorous and reliable.

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'In the strongest possible terms, as theorists, we now urge our friends in experimental science to do whatever they can to obtain further information on the properties of nature's building blocks at the tiniest possible scales in our business, this means reaching for the highest attainable energies: the Large Hadron Collider will make such a step. We can hardly wait.'

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- [33] cmartin, 'Mauro Dell'Ambrogio, Swiss State Secretary for Education and Research', *Research Media Ltd*, 6 December 2012, <<http://www.research-europe.com/index.php/2012/12/mauro-dellambrogio-swiss-state-secretary-for-education-and-research>> [archived by WebCite on 31 August 2014 [Δ](#)]
- [34] J.-L. Baldy et al., *Projet LHC: Etude d'impact sur l'environnement*, Ed. M. Buhler-Broglin (CERN, Geneva, March 1997) 384pp. pdf, ISBN: 92-9083-100-6, <<http://cds.cern.ch/record/348945/files/LHC-etude-impact.pdf>> [archived by WebCite on 31 August 2014 [Δ](#)]
- [35] J.-P. Blaizot, J. Iliopoulos, J. Madsen, G.G. Ross, P. Sonderegger, and H.-J. Specht (LHC Safety Study Group), *Study of Potentially Dangerous Events During Heavy-Ion Collisions at the LHC: Report of the LHC Safety Study Group*, (CERN, Geneva, 28 February 2003) v, 14pp., CERN-2003-001, doi: [10.5170/CERN-2003-001](https://doi.org/10.5170/CERN-2003-001), ISBN: 9789290832041, CDS: [613175](#)
- [36] Swiss Federal Council, CERN Council, 'Agreement between The Swiss Federal Government and the European Organization for Nuclear Research concerning the Legal Status Of that Organization in Switzerland', 20 June 1955, 11 June 1961 (reissued), CERN/0115/Rev.3, 1955: <<http://cds.cern.ch/record/22996/files/CM-P00074866-e.pdf>>, 1961: <<http://cds.cern.ch/record/22996/files/CM-P00074865-e.pdf>>, CDS: [22996](#)

Note also Article 10 of the subsequent 2010 Treaty given below:

Swiss Federal Council, French Ministry for Foreign and European Affairs and CERN Council, 'Agreement between France, Switzerland and CERN relating to protection against ionising radiation and the Safety of the Organization's facilities', 16 September 2010, Draft of agreement (as approved by Swiss Federal Council on 18 June 2010) requiring CERN Council's approval:

<https://cds.cern.ch/record/1298699/files/001298699_English.pdf>, CERN Council approves draft: <<http://council.web.cern.ch/council/en/governance/Decisions156Sept10.html>>, CDS: [001298699](#)

'Nothing in this Agreement shall affect the right of the Swiss Federal Council or the 'French Government to take appropriate measures, which may include requesting CERN to suspend the operation of its Facilities, in the interest of the security of Switzerland or France in accordance with the provisions of Article 26 of the Headquarters Agreement or Article XXII of the Status Agreement respectively.'

- [37] M. Calmy-Rey [Federal Councillor], '08.5323 – Question Period. Question Vischer Daniel. CERN', National Council, Autumn Session 2008, Eleventh Sitting, 29 September 2008, 14:30, *Bulletin officiel - Les procès-verbaux du Conseil national et du Conseil des Etats*, Ed. F. Comment, in *Die Bundesversammlung - Das Schweizer Parlament*, <http://www.parlament.ch/ab/frameset/f/n/4805/281528/f_n_4805_281528_281560.htm>

in response to:

D. Vischer [National Councillor], '08.5323 – Question Period. Question: CERN', 29 September 2008, Curia Vista - Geschäftsdatenbank, in *Die Bundesversammlung - Das Schweizer Parlament*, <http://www.parlament.ch/D/Suche/Seiten/geschaefte.aspx?gesch_id=20085323>

- [38] Parliamentary Control of the Administration (PCA), '2013 Annual Report of the Parliamentary Control of the Administration: Appendix to the 2013 Annual Report by the Control Committees and the Control Delegations of the National council and the Council of States', *Die Bundesversammlung - Das Schweizer Parlament*, 31 January 2014, 3pp. pdf, <<http://www.parlament.ch/e/organe-mitglieder/kommissionen/parlamentarische-verwaltungskontrolle/Documents/jahresbericht-pvk-2013-e.pdf>>

For further details, see:

Parliamentary Control of the Administration (PCA), 'Jahresbericht 2013 der Parlamentarischen Verwaltungskontrolle Anhang zum Jahresbericht 2013 der Geschäftsprüfungskommissionen und der Geschäftsprüfungsdelegation der eidgenössischen Räte', *Die Bundesversammlung - Das Schweizer Parlament*, 31 January 2014, 28pp. pdf, <<http://www.parlament.ch/d/organe-mitglieder/kommissionen/parlamentarische-verwaltungskontrolle/Documents/jahresbericht-pvk-2013-d.pdf>>

Parliamentary Control of the Administration (PCA), 'Rapport annuel 2013 du Contrôle parlementaire de l'administration: Annexe au rapport annuel 2013 des Commissions de gestion et de la Délégation des Commissions de gestion des Chambres fédérales' (translation from German), *Die Bundesversammlung - Das Schweizer Parlament*, 31 January 2014, 28pp. pdf, <<http://www.parlament.ch/f/organe-mitglieder/kommissionen/parlamentarische-verwaltungskontrolle/Documents/jahresbericht-pvk-2013-f.pdf>>

[39] For further comments on this issue, see:

M. Leggett, 'Review of the risk assessment process used for the 2008 LHC safety study', September 2009, 14pp. pdf, <http://www.grmp.org/upload/Review_of_LHC_safety_review_sept_1__09.pdf>