

Depressed, I returned the thesis without examining it with a remark to the Registrar of the University. I had no response from the University and have no clue as to what was done with the thesis. My guess is that it would have been sent to another naive examiner elsewhere and

probably the author of the thesis is currently – gleefully – perpetuating this behaviour through his Ph D students!

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1. Foster, K. R. and Chopra, K. L., *Curr. Sci.*, 2012, **103**, 1258–1259.
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## Bio-toilets for Indian Railways

Bio-toilets are projected to improve sanitation in the trains to solve the problem of open defecation<sup>1,2</sup>. Bio-toilets are based on continuous anaerobic microbial digestion of human excreta to biogas. Typical composition of biogas is 55–75% methane and 25–50% carbon dioxide. In these bio-toilets, gases escape into the atmosphere and treated waste water is discharged after chlorination. Bio-toilets welded to passenger coaches have an inlet for human excreta and outlet for biogas. They are an economically viable solution, with one bio-toilet costing Indian rupees 15,000 (US\$ 280). There is also a plan of installing these toilets in over 100,000 Gram Panchayats in the next five years. This will help solve the problem of open defecation in rural India. Although this is a good beginning, the concept of bio-toilets in trains will be

entirely different from those in Gram Panchayats (houses, schools, institutes, etc.). In the latter case, trapped methane will most probably be used as a cooking gas, whereas in the case of trains it will be released to the atmosphere. The Indian Railways carries 20 million passengers daily and once bio-toilets are equipped in all 53,000 coaches by 2022 as projected, methane emissions will be substantially increased. Methane as a greenhouse gas had a global warming potential of 25 compared to carbon dioxide over a 100-year-period<sup>3</sup>. The Indian Railways may look for engineering solutions to capture and store methane released from the bio-toilets. Vehicles including trains which are successfully fuelled with compressed and concentrated biogas may be taken for case studies<sup>4</sup>. Also, rail-toilets are generally small and care

should be taken to divert methane out, because it is an asphyxiant and may displace oxygen in an enclosed space.

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1. Narain, S., *Nature*, 2012, **486**, 185.
  2. Sharma, A. *et al.*, *Nature*, 2012, **489**, 33.
  3. Shindell, D. T. *et al.*, *Science*, 2009, **326**, 716.
  4. US Department of Energy, What is biogas? April 2010, p. 13.
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## German Bundesrat proposes second usage of publicly funded research

On 12 October 2012, the German Bundesrat (Federal Council of Germany) has passed a resolution to clearly change several paragraphs of the UrhG (German Copyright Act; GCA) in favour of the scientific dissemination principle. We have observed a series of changes to the GCA over the last few years. Many of them were highly problematic for scientists in terms of free and wide-area circulation of their research outputs. For instance, on 1 January 2008, the ‘Second Act Governing Copyright in the Information Society’ (Second Basket) took effect strictly limiting the distribution of PDF reprints, even if authorized and issued by the author herself/himself<sup>1</sup>. GCA is now to be reformed in clear direction to open access properties for research that is

(mostly) publicly funded. Particularly, the Bundesrat, the legislative body representing Germany’s 16 federal states, proposes to change §38 UrhG in order to permit open access of such material by six months after initial publication. Importantly, the according right to give unrestricted access to own publications would also apply for works for which authors have subrogated their exclusive legal right of use.

This important step would finally put an end to the paradoxical situation that national research foundations pay scientists to write papers and that the copyrights for these publications are transferred to the publishers from whom scientist colleagues will have to buy back reprints to be able to read or use them. It

seems that the scientific community and now also political forces have realized that we have to allow free access to any material the international community has created and generated to really enable everyone to benefit from a globalized world<sup>2</sup>.

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1. Carbon, C. C., *Science*, 2008, **319**, 1483.
  2. Seadle, M., *Libr. Hi Tech.*, 2007, **25**, 298.
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