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On voluntary and obligatory nano-labelling

Summary

Labelling is a central regulatory tool for risk governance. It aims at meeting a number of goals: It should enable consumers to make informed purchase decisions, avoid consumers being misled and promote innovation. Hence, consumers take part in the risk management of different product groups. Labelling of nano-products has been part of the early discussion on nano-regulation, both at national and EU level. Member states have refrained from independent national initiatives. However, nano-specific labelling obligations have been adopted in European law for cosmetics, food and biocidal products. In contrast, international initiatives for voluntary labelling have not succeeded on the market.

Introduction

Similar to the earlier debate on genetic engineering,¹ there is discussion on specific labelling for nano-products (see next section for details). With regard to consumer products – for example food, cosmetics, plant protectants, detergents, textiles and other commodities – labelling obligations gradually replace and act alongside traditional legal instruments such as authorisation procedures. As a result, consumers, through their purchasing decisions, take part in risk assessment and management.²

Although labelling requirements are relatively mild regulatory tools, they may impose considerable commitments upon the obligated parties. Nevertheless, EU law increasingly relies upon labelling to govern risks in different areas of life.³ The labelling of nano-products has been a demand at member state⁴ and European level⁵. While such ambitions in member states – often with a reference to the European level – have come to a standstill,⁴ there are already explicit European nano-labelling obligations for cosmetics, food and biocidal products. The present dossier outlines the international debate as well as existing voluntary regimes, analyzes nano-labelling obligations within EU law and presents unsuccessful efforts at labelling for electrical and electronic appliances as well as for novel foods.

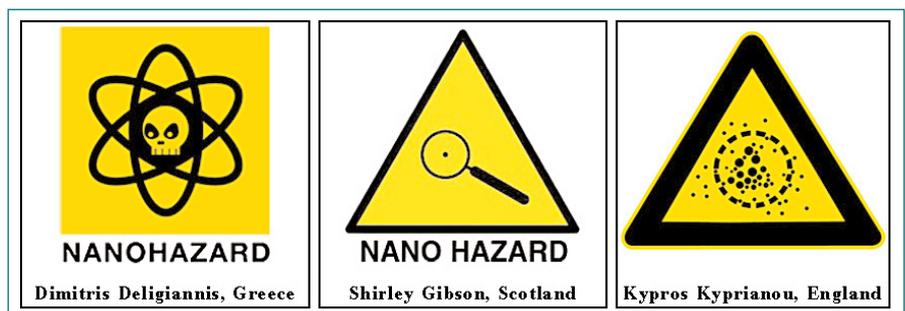
The debate on the labelling of nano-products

Labelling increasingly plays a role in risk control and technology regulation.⁶ When traditional legal instruments reach their limits, use is made of information instruments, ranging from product information and recommendations to warnings.⁷ In addition to government and other official authorities, information is also given by the industry, which labels its products either voluntarily or following an obligation.⁸

With regard to nanotechnology, labelling has also been called for on numerous occasions. Back in 2004, **The Royal Society & The Royal Academy of Engineering (UK)** proposed the inclusion of synthetic nanoparticulate materials in the list of components and/or contents of consumer products.⁹ On the one hand, experts argue that chemicals in the form of nano-particles should be treated as new substances. On the other hand, there is a need for transparency and information.

The Canadian environmental protection organisation **Action Group on Erosion, Technology and Concentration (ETC-Group)** assesses the risks of synthetic nano-materials as high and called for a moratorium as early as 2003.¹⁰ In 2006, the organisation set up a competition to find a “nano-hazard symbol” for labelling products or transport containers and for installing warning notices in laboratories and factories (Fig. 1).

Figure 1:
The winners of the “nano-hazard symbol” competition of the Canadian ETC-group¹¹



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A number of countries have held public discussions, polled citizens or held consumer conferences on the topic of nanotechnology. The German **Bundesinstitut für Risikobewertung (BfR)** held a consumer poll in 2006.¹² The consumer group consisting of 16 citizens urged producers to list particle size alongside ingredients for cosmetics, and to label nano-refined textiles. The **Zentrum für Technologiefolgen-Abschätzung (TA-SWISS)** held what were known as *publifocus* events on the topic “Nanotechnologien und ihre Bedeutung für Gesundheit und Umwelt” (“Nanotechnologies and their importance for health and the environment”) throughout Switzerland. TA-SWISS asked randomly-chosen citizens if a uniform declaration would be necessary.¹³ The discussion events revealed a huge demand for information. There was concern amongst the participants that they had already unknowingly bought products with synthetically manufactured nano-particles. The majority called for an obligation for novel products to be declared. The British consumer protection organisation **Which?** organised a consumer conference at the end of 2007.¹⁴ The participants called for the labelling of cosmetic products containing loose nano-particles. To avoid confusion, the participants demanded better information on nanotechnology. **Which?** also carried out a survey on the issue of “Nanotechnology” in 2008. 67 % spoke out in favour of the clear labelling of cosmetics and personal care products manufactured on the basis of nanotechnology.

In July 2007, 70 civil-society groups, environmental associations and labour unions of different nations presented their “*Kriterien zur Kontrolle von Nanotechnologie und Nanomaterialien*” (“Criteria for the control of nanotechnology and nano-materials”).¹⁵ The signatories emphasised that specific instruments were necessary in order to evaluate and control nano-materials. This included labelling consumer products containing nano-materials, information rights and safeguards at the workplace as well as an openly accessible database on health and security information.

In Austria, **Ärztinnen und Ärzte für eine gesunde Umwelt, die Umweltberatung, the Österreichische Ökologie-Institut** and the **Verein für Konsumenteninformation (VKI)** published a position paper in December 2007, which called amongst other things for general and easily comprehensible information on nano-products.¹⁶ The packaging should provide information on nano-materials for consumers and advisory organisations.

The two European consumer protection organisations – **The European Consumers’ Organisation (BEUC)** and **The European Consumer Voice in Standardisation (ANEC)** – also advocate greater transparency and labelling of consumer products containing nano-materials.¹⁷ In addition, the **Öko-Institut e.V.** (Freiburg, Germany) demands that consumers be allowed to freely choose if they wish to buy products for which it cannot be ruled out that they contain loose nano-particles (e.g. foods, cosmetics, detergents and care products). A labelling obligation could substantially increase transparency.¹⁸

The **Bund für Umwelt und Naturschutz Deutschland e.V. (BUND)** believes that a labelling obligation for foods, cosmetics, textiles and detergents is necessary. Since many consumers have little understanding of the term “nanotechnology”, producers would have to provide further information about the materials used.¹⁹ **Greenpeace Österreich** demands labelling on the market to enable consumers to make well-informed purchase decisions.²⁰

The industry on the other hand has reservations against a “nano-label”, arguing that under certain circumstances it might cause uncertainty amongst consumers and trigger (possibly unfounded) anxieties. A simple “nano-label” could be understood as a warning symbol, while a label with extensive information, on the other hand, could lead to “over-information” and thereby also fail to meet its purpose.²¹

The **Verband der deutschen Lack- und Druckfarbenindustrie e.V.** has commented that a specific nano-label would cause a substantial shift in the EU philosophy of only highlighting dangerous materials and compositions.²² As nano-particles are not in principle dangerous by their nature, undifferentiated labelling could stigmatise and malign nano-materials in general. This would counteract opportunities in nanotechnology, such as to reduce the burden on the environment. For this reason, the German coating and printing ink industry speaks out against general nano-labelling. However, voluntary labelling for certain coatings and paints – in connection with the long-established voluntary product declaration – would be worth discussing.

Initiatives on voluntary labelling

“Nano” has been readily used as a sales-effective catchword in the last few years, presumably also for conventional products that have nothing to do with nanotechnology. This is not only unsatisfactory for consumers but also for the producers; after all, they invest a large amount of research and development work in their products. This is the reason for isolated initiatives in different countries for voluntary labelling with special labels and so-called quality seals, which have failed to succeed on the market, however.²³

One example is the **forumnano-Gütesiegel** – an initiative by medium-sized German companies based in Frankfurt/Main launched in January 2008.²⁴ Since 2008, the quality seal has only been given to two products, one of which has already been withdrawn from the market.

The **Hohenstein Institute** in Bönningheim, Germany, examines textiles containing nano-materials with regard to whether their functionality relies upon nanotechnology, if the nano-coating is suitable for use and if there are possible biological risks.²⁵ Four companies’ products have so far received such a quality label.²⁶

The **Institut für Textil- und Verfahrenstechnik (ITV)** in Denkendorf (Germany) together with the trademark owner Prof. Barthlott have developed a quality seal for self-cleaning textiles (e.g. awning fabrics)^{27;28} “Self-cleaning inspired by nature” (Fig. 2). The test procedure includes whether superhydrophobia occurs, whether the material is durable and whether the surface structures at issue are present. Information on which companies’ products have so far received the label is not available.

The **British Standards Institution (BSI)** published an instruction for the (voluntary) labelling of synthetic nano-particles and of products that contain such particles in 2007.³⁰



Figure 2:
Quality label for self-cleaning textiles
“Selfcleaning inspired by nature”²⁹

The introduction of this new technology on the market should be open and transparent. The BSI recommends different labelling for consumer products, nanoparticles for professional application and for use on the wholesale market. The instruction includes examples of the relevant text information. These proposals have not been taken up by the industry.

So far there is no “negative labelling” in the form of special “nano free”-labels, although there are sporadic attempts at informing consumers of products that do not contain artificial nano-particles. For example, for the season 2011/2012 the Australian environmental protection organisation “Friends of the Earth” published a list of sunscreen products which are claimed not to contain any synthetic nano-particles (such as the nano-particular UV-filters titanium dioxide and zinc oxide) according to the manufacturer’s specifications.³¹ Tests showed, however, that these indications were not always reliable and that allegedly “nano free”-sunscreen products did indeed prove to contain nano-materials. Consequently, the organisation had to withdraw the list.³²

The British **Soil Association** was the first organic farming association which banned its members from using nano-materials. Since 1.1.2008, products certified by the organisation – in particular health, cosmetic and food products as well as textiles – must no longer contain synthetic nano-materials.³³ The German **Öko-Verband Naturland** criticised the fact that consumers currently cannot know if nano-technology is used during manufacturing, and wants to forbid nanoparticles in Naturland-certified foods (including their packaging) by 2012.³⁴

Nano-relevant labelling-obligations in EU-law

Labelling obligations follow different goals: unambiguous information that will allow consumers to make responsible purchasing choices,³⁵ and secure, healthy and sustainable product development. Such obligations should also reconcile the diverging interests of consumers and industry.³⁶ Labelling impacts depend largely upon what people associate with different products or technologies.³⁷ Positive or negative associations will either increase or decrease the purchasing of nano-products. Informed and responsible purchasing decisions and secure und healthy

product development require a transparent legal framework and uniform labelling obligations.³⁸ In any case, labelling obligations create knowledge. They include those affected – whether industry or consumers – in risk regulation.³⁹ In some cases it even replaces governmental risk management (for example authorisation procedures).⁴⁰

While as yet there are no labelling obligations for nano-products at national level,⁴ the situation is different at EU level.

Cosmetics

The new European Cosmetics Regulation came into force on 1.1.2010.⁴¹ It also includes nano-specific provisions.⁴² As an EU regulation the provisions are directly applicable in all member states. Apart from specific safety assessments and notification obligations,⁴³ it also provides for nano-specific labelling requirements⁴⁴. Substances that correspond with the nano-definition (see below) are to be included in the list of ingredients and the word “nano” to be put in brackets. This is usually included on the product label, although exceptions are possible in cases where this is justified. To provide for a uniform labelling, the EU is creating a glossary of common ingredient names, which also includes nano-materials.⁴⁵ The labelling of nano-materials is to follow the name used within the glossary; should no uniform name be available yet, a generally accepted nomenclature is to be used.⁴⁶ As only labelled cosmetics are considered safe,⁴⁷ nano-products may only be marketed provided that they are specified as such. The labelling requirements shall apply from 11.7.2013.⁴⁸ From this date on, all nano-materials used in production are to be included in the list of ingredients.

The manufacturer or the importer of the cosmetics is responsible for the labelling; where the manufacturer is located outside the EU, a responsible person must be designated who shall provide for the proper labelling.⁴⁹ Additionally, the distributor in question needs to verify the labelling information before placing the product on the market.⁵⁰ The authorities of the member states are responsible for monitoring compliance.⁵¹ Who these may be depends upon national legislation. In any case, the member states shall provide authorities with proper resources. In Austria, the provincial governors as well as bodies acting under their authority are currently primarily responsible for the control of and compliance with provisions regarding cosmetics within the scope of application of the LMSVG.⁵²

Incorrect labelling may lead to a variety of consequences: Conditions may be imposed upon the person responsible for labelling (manufacturer or importer). The person may be required to withdraw or recall incorrectly labelled cosmetics from the market; in any case, the measures need to be based on the risk⁵³ and must be justified.⁵⁴ Depending on the risk situation the intervention may be undertaken by carrying out a procedure (and through an individual administrative decision) or without procedure (through direct orders and execute coercive measures). (Administrative) penalties against the manufacturers or importers shall be determined by the member states; these must be “effective, proportionate and dissuasive”.⁵⁵

Foods

On 25.10.2011, following several years of negotiations,⁵⁶ the EU decided upon the new provision of food information to consumers⁵⁷ containing labelling requirements for nano-materials⁵⁸ (for definition see below). Like the Cosmetics Regulation, the Food Information to Consumers Regulation is directly applicable in all member states. In general its aims are to inform consumers and enable informed purchasing decisions.⁵⁹ The regulation contains far reaching labelling requirements for food, the list of mandatory particulars is long.⁶⁰ Labelling is to be effected in words and numbers, and pictograms and symbols may be used in addition; the information is to be written in a language which is easily comprehensible for the consumer.⁶¹

Concretely, there exists a labelling requirement for ingredients containing nano-materials. The word “nano” is to be put in brackets next to the nano-material in question. The labelling requirements address food business operators across the entire food chain.⁶² The food business operators or the importers are responsible for proper labelling.⁶³ According to the Feed and Food Control Regulation,⁶⁴ the control and surveillance of the obligations arising from the Food Information to Consumers Regulation lies with the member states as well as enacting potential sanctions (Art. 55 of the Feed and Food Control Regulation).

The Food Information to Consumers Regulation has been in force since 12.12.2011 and will be applicable from 13.12.2014 onwards. However, the Regulation contains various transitional provisions: For example, foods placed on the market and labelled before 13.12.2014 may continue to be marketed.⁶⁵ This measure aims in particular at not placing a disproportionate burden upon food operators.

Biocidal products

On 19.1.2012, following agreement with the Council,⁶⁶ the European Parliament, through ordinary legislative procedure, adopted on second reading a Regulation on the Making Available on the Market and Use of Biocidal Products (Biocidal Product Regulation);⁶⁷ the decision in the Council of Environmental Ministers is considered to be a mere formality.⁶⁸ Generally, the regulation shall apply from 1.9.2013.⁶⁹ Possible transitional provisions (for example for products which are already on the market) still depend upon the date of the actual decision.⁷⁰

The regulation also contains extensive nano-specific rules. In particular, nano-materials must undergo a specific risk assessment;⁷¹ products containing nano-materials may not be marketed under a simplified authorisation procedure;⁷² member states are required to report on nano-materials that are on the market and their potential risks every five years.⁷³ Finally, the regulation contains extensive labelling requirements for biocidal products as well as for treated articles.⁷⁴

According to the Biocidal Product Regulation, in addition to other information, there must be a notice if a product contains nano-materials⁷⁵ (on the definition see below). Again, this is to be done by putting the word "nano" in brackets next to the material; additionally, specific related risks must be mentioned. For treated articles containing nano-materials, these are also to be indicated by the person that places the treated article on the market.⁷⁶ Generally, authorisation holders are responsible for proper labelling.⁷⁷

The member states monitor the labelling.⁷⁸ Under current law, biocidal products are monitored by the provincial governors, which is also the case for directly applicable EU law,⁷⁹ and hence also the labelling requirements of the future Biocidal Product Regulation. Concerning the monitoring of proper labelling of biocidal products, Austrian Biocidal Product Law⁸⁰ provides that the provincial governors concerned issue an annual plan for monitoring, inter alia, the proper labelling of biocidal products. Member states are also responsible for sanctions with regard to possible violations of the regulations; as in the Cosmetics Regulation, sanctions should be "effective, proportionate and dissuasive".⁸¹

Different nano-definitions

The three EU regulations portrayed above contain different definitions of nano-materials. At first sight this appears justified, considering that different nano-materials require different treatment. However, excessive divergences in the various legal materials are harmful for legal unity. This is one of the reasons why the European Commission issued a non-binding recommendation containing a working definition for nano-materials in October 2011.⁸² Although the recommendation itself takes as a premise that existing provisions are to be left untouched, the Commission is required to consult its own recommendations when drafting new regulations or revising existing legislation.

Within the scope of the Cosmetics Regulation, which came into force prior to the recommendation, "nano" "means an insoluble or biopersistent and intentionally manufactured material with one or more external dimensions, or an internal structure, on the scale from 1 to 100 nm". What is striking in this definition is that it focuses exclusively on the spatial dimension of the materials and not properties inherent in nano-materials, for example. The scale also seems quite rigid as it excludes anything smaller than 1 or larger than 100 nm. Furthermore, the definition only encompasses intentionally created nano-material.⁸³

The Food Information to Consumers Regulation also only includes intentionally made nano-materials. Extraordinarily enough, this definition does not follow the recommendation for the definition of nano-materials made by the Commission⁸⁴ although they were issued simultaneously. It departs significantly from the definition given in the Cosmetics Regulation: the size restriction is only limited upwards and even there irregularities are possible (in cases in which "characteristics of the nanoscale" appear in structures larger than 100 nm). In this way, the EU has responded to criticism regarding the cosmetics law that a strict 1-100 nm delimitation is not an appropriate criterion.⁸⁵ By including larger structures such as agglomerates and aggregates, the definition is also a reaction to the fact that, apart from size, specific properties are relevant. However, it retains "properties that are characteristic of the nanoscale". These include "i) those related to the large specific surface area of the materials considered; and/or ii) specific physico-chemical properties that are different from those of the non-nanoform of the same material".

Unlike the definition in the Cosmetics Regulation and the Food Information to Consumers Regulation, the definition of nano-material in the Biocidal Product Regulation follows that proposed by the Commission in its recommendation.⁸⁴ According to this, nano-material is a natural or manufactured active or non-active agent "containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm. Fullerenes, graphene flakes and single wall carbon nanotubes with one or more external dimensions below 1 nm should be considered as nano-materials". A particle is considered to be "a minute piece of matter with defined physical boundaries"; agglomerates are "a collection of weakly bound particles or aggregates where the resulting external surface area is similar to the sum of the surface areas of the individual components" and an aggregate "a particle comprising of strongly bound or fused particles".

Failed labelling efforts at EU level

For the time being, nano-specific labelling requirements for electrical and electronic devices as well as for novel foods have failed. The European Parliament's Environment Committee called for the labelling of all electrical and electronic devices that contain nano-materials when revising the Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)^{86, 87} However, – following massive opposition⁸⁸ – the revised directive does not contain any such labelling requirements.⁸⁹

The efforts in the field of novel foods had already been more advanced. In 2008, the Commission proposed a Novel Food Regulation.⁹⁰ In the course of revision efforts, the Parliament consequently advocated for a systematic labelling requirement for novel foods. The Commission and the Council, on the other hand, argued in favour of demand-based labelling.⁹¹ The labelling of food packaging was also discussed, the Council always presenting the view that this should be regulated within the framework of the Food Packaging Regulation. Irrespective of the different lines of discussion, the revision finally failed in 2011.

Notes and References

- 1 See Wagner, Kennzeichnungspflichten bei gentechnisch veränderten Lebensmitteln und wettbewerbsrechtliche Aspekte der Negativkennzeichnung, RdU 2002, 3 with further references.
- 2 For the sector of food-labelling see the substantial analysis by Grube, Verbraucherschutz durch Lebensmittelkennzeichnung? Eine Analyse des deutschen und europäischen Lebensmittelkennzeichnungsrechts (1997); see also the examples given by Schlacke, Auf dem Weg zu einer Informationsverfassung für Produktrisiken, in Albers (ed.), Risikoregulierung (2011) (Endnote 6) 123, 126.
- 3 On this see for example Grube (Endnote 2).
- 4 In particular, see NanoTrust Dossier 018en and the Austrian parliamentary questions on nanotechnology contained therein.
- 5 On this see also NanoTrust Dossier 017en as well as COM (2005) 243.
- 6 On this see also Albers, Risikoregulierung im Bio-, Gesundheits- und Medizinrecht, in Albers (ed.), Risikoregulierung im Bio-, Gesundheits- und Medizinrecht (2011) 9, in particular 16f. with further references.
- 7 On this see also Schlacke (Endnote 2) 123ff. On the role of information also see Schoch, Information und Kommunikation im Lebensmittelrecht: Europarechtliche und verfassungsrechtliche Grundlagen staatlichen Informationshandelns und privater Informationspflichten, ZLR 2010, 121.
- 8 On this see for example the possibilities of labelling of the Food Information to Consumers Regulation (Endnote 57).
- 9 Cf. The Royal Society: "Nanoscience and nanotechnologies", 73, Item 26; www.nanotec.org.uk/report/Nano%20report%202004%20fin.pdf.
- 10 See ETC-Group: "Size matters. The Case for a global moratorium", 14.4.2003; www.etcgroup.org/upload/publication/165/01/occ.paper_nanosafety.pdf.
- 11 Cf. www.etcgroup.org/en/nanohazard.
- 12 See BfR Verbraucherkonferenz zur Nanotechnologie in Lebensmitteln, Kosmetika und Textilien. Verbrauchervotum zur Nanotechnologie, 20.11.2006, www.bfr.bund.de/cm/220/verbrauchervotum_zur_nanotechnologie.pdf.
- 13 See TA-Swiss: publifocus zu Nanotechnologien. Chancen und Risiken frühzeitig diskutieren. Medienmitteilung, 12.7.2006, www.ta-swiss.ch/?uid=38. In this context see also Burri, Deliberating Risks under Uncertainty: Experience, Trust, and Attitudes in a Swiss Nanotechnology Stakeholder Group, NanoEthics 2007, 143.
- 14 See Which?: Small wonder? Nanotechnology in cosmetics. November 2008, www.which.co.uk/documents/pdf/nanotechnology-and-cosmetics-161175.pdf.

Conclusions

For several years now, environmental and consumer protection organisations in particular have called for the labelling of "nano-products" to enable consumers to make informed purchasing decisions. While voluntary initiatives can be regarded as having failed due to opposition from industry – and probably also a lack of demand from the consumers up until now – the coming years will see labelling requirements for certain product groups through provisions of EU law.

Within the EU, a model for labelling has been established; the provisions in question hardly differ from each other. Accordingly, nano-substances need to be labelled and the word "nano" added in brackets. An obligation to indicate possible risks is so far only intended for biocidal products. There are, however, differences as to what nano-materials are. Although legal uncertainties exist, this seems justified or even necessary considering the fact that there are strong divergences in application. Within the separate legal materials, the power of definition is delegated to the administration (the Commission, so to speak), but not in all aspects. The legislator obviously wants to keep the question of what constitutes a nano-material within the field of legislation, given that the question is not just technically but also politically relevant. Industry is responsible for proper labelling. Depending upon law and subject matter, the persons who primarily bear responsibility vary. Control, monitoring and sanctions are, however, within the competence of the member states.

Due to the relatively high effort involved in labelling, the obligations are indeed controversial. The industry needs to comply with them alongside extensive product information for security assessments and possible registration requirements. Additionally, only evidently risky products originally needed to be labelled within the EU framework and this labelling should to some extent have replaced governmental risk assessment. If now only a few product groups are generally labelled irrespective of whether a certain material or product proves to be a risk, whether it has undergone risk assessment or has even been subject to an authorisation procedure, this leads to unequal treatment of different material and product groups. Furthermore, it would have the unwelcome effect of making risk regulation opaque, thus possibly leading to systemic weakness. What the effects of labelling are depends largely upon the renown of certain technologies within society.

- 15 See www.bund.net/fileadmin/bundnet/publikationen/nanotechnologie/20080220_nanotechnologie_kontrolle_kriterien.pdf.
- 16 See www.ecology.at/files/pr476_3.pdf.
- 17 See Nanotechnology: Small is beautiful but is it safe? Joint ANEC/BEUC Position, Juni 2009; www.anec.org/attachments/ANEC-PT-2009-Nano-002final.pdf.
- 18 See Chancen der Nanotechnologie nutzen! Risiken rechtzeitig erkennen und vermeiden! Positionspapier des Öko-Instituts e.V., Juni 2007; www.oeko.de/oekodoc/472/2007-077-de.pdf.
- 19 See www.bund.net/themen_und_projekte/nanotechnologie/forderungen_des_bund.
- 20 See www.greenpeace.org/austria/de/themen/konsum/Was-wir-tun/sonnencreme.
- 21 See Innovationsgesellschaft, St. Gallen/Schweiz: Konferenzbericht 5th Internationale "NanoRegulation" Conference, "No Data, no Market? Challenges to Nano-Information and Nano-Communication along the Value Chain"; Workshop I: "Nano-labelling in Consumer Products"; January 2010, 38 and 39, www.innovationsgesellschaft.ch/media/archive2/publikationen/NanoRegulation_5_Report_2009.pdf.

- 22 See www.lackindustrie.de/default2.asp?cmd=shd&docrn=129920&rub=651&tma=1&nd=.
- 23 On this see also NanoTrust Dossier 016en.
- 24 See forumnano.com/index.asp.
- 25 See www.hohenstein.de/de/testing/material/effectiveness/effectiveness.xhtml.
- 26 See www.hohenstein.de/de/certification/certified_products/certified_products.xhtml?CurrentPage=10.
- 27 See NanoTrust Dossier 020en.
- 28 See www.bio-pro.de/magazin/thema/00168/index.html?lang=de&artikelid=/artikel/02688/index.html.
- 29 See carola-tremel.de/kinderg%C3%A4rten/markisentuch-sunsilk-snc.
- 30 See "Guidance on the labelling of manufactured nanoparticles and products containing manufactured nanoparticles" (PAS 130:2007; www.bsigroup.com/en/sectorsandservices/Forms/PAS-130/Download-PAS-130/).
- 31 See nano.foe.org.au/safesunscreens.
- 32 See www.abc.net.au/am/content/2012/s3427315.htm.
- 33 See Soil Association organic standards: www.soilassociation.org/organicstandards.
- 34 Siehe www.naturland.de/detail_2011+M5e858acc555.html.

- 35 See, e.g., Art. 3 (1) of the Food Information to Consumers Regulation (Endnote 57). On responsible consumers with regard to the labelling of genetically engineered products, see also *Burchardi*, Risikoregulierung im Umgang mit gentechnisch veränderten Organismen (GVO), in *Albers* (ed.), *Risikoregulierung* (2011) 79, 100f.
- 36 In this regard see, e.g., Art. 1 (1) of the Food Information to Consumers Regulation.
- 37 See *Eisenberger*, *Kleine Teile, große Wirkung? Nanotechnologieregulierung in der Europäischen Union* (2010) 20 with further references, epub.oeaw.ac.at/ita/ita-manuscript/ita_10_01.pdf.
- 38 See, e.g., *Rourke*, *European food law*³ (2005) 55ff.
- 39 On this, cf. for example *Albers*, (Endnote 6) in particular 16 with further references.
- 40 On this, see, e.g., *Wagner* (Endnote 1) 3.
- 41 Regulation 1223/2009.
- 42 See *Eisenberger* (Endnote 37) 15ff. with further notes; *Bowman/van Calster/Friedrichs*, *Nanomaterials and regulation of cosmetics*, *Nature Nanotechnology* 2010, 92. See also [NanoTrust Dossier 008en](#).
- 43 See *Eisenberger* (Endnote 37) 18ff. with further references.
- 44 Art. 19 (1) (g) of the Cosmetics Regulation.
- 45 Art. 33 of the Cosmetics Regulation.
- 46 Art. 19 (6) of the Cosmetics Regulation.
- 47 Art. 3 (b) of the Cosmetics Regulation.
- 48 Art. 40 (2) of the Cosmetics Regulation.
- 49 Art. 4 (3) – (5) together with Art. 5 (1) and Art. 19 (1) (g) of the Cosmetics Regulation.
- 50 Art. 6 (2) of the Cosmetics Regulation.
- 51 Art. 22 of the Cosmetics Regulation.
- 52 § 24 LMSVG. For further study see *Hauer*, *Lebensmittelrecht*, in *Holoubek and Potacs* (eds.), *Handbuch des öffentlichen Wirtschaftsrechts*. Bd. II² (2007) 571, 599ff.
- 53 Art. 25 of the Cosmetics Regulation.
- 54 Art. 28 (1) of the Cosmetics Regulation.
- 55 Art. 37 of the Cosmetics Regulation.
- 56 The original draft by the Commission, COM (2008) 40, dated from 2008.
- 57 Regulation 1169/2011.
- 58 Art. 18 (3) of the Food Information to Consumers Regulation.
- 59 Art. 3 (1) of the Food Information to Consumers Regulation.
- 60 Art. 9 of the Food Information to Consumers Regulation.
- 61 Art. 15 of the Food Information to Consumers Regulation.
- 62 Art. 1 (3) of the Food Information to Consumers Regulation.
- 63 Art. 8 of the Food Information to Consumers Regulation.
- 64 Cf. Regulation 882/2004.
- 65 Art. 54 (1) of the Food Information to Consumers Regulation.
- 66 See on this for example the press release of the EU Environment-Commissioner of 20.1.2012, MEMO/12/26.
- 67 Cf. P7_TA(2012)0010.
- 68 On this see MEMO/12/26.
- 69 Art. 97 of the Biocidal Products Regulation.
- 70 Art. 94 of the Biocidal Products Regulation.
- 71 Art. 19 (1) (f) of the Biocidal Products Regulation.
- 72 Art. 25 of the Biocidal Products Regulation.
- 73 Art. 65 (3) of the Biocidal Products Regulation.
- 74 Art. 69 as well as Art. 58 of the Biocidal Products Regulation.
- 75 Art. 69 (2) (b) of the Biocidal Products Regulation.
- 76 Art. 58 (3) of the Biocidal Products Regulation.
- 77 Art. 69 (2) (b) of the Biocidal Products Regulation.
- 78 Art. 65 of the Biocidal Products Regulation.
- 79 § 34 (1) Biocidal Products Act, Federal Gazette I 105/2000 as amended from time to time.
- 80 § 34 (4) Biocidal Products Act.
- 81 On this see Art. 87 of the Biocidal Products Regulation.
- 82 Recommendation 2011/696.
- 83 Cf. *Eisenberger*, (Endnote 37) 17ff. with further references.
- 84 Cf. on this 2011/696/EU.
- 85 Cf. *Bowman/van Calster/Friedrichs* (Endnote 42) 92 as well as *Eisenberger* (Endnote 37) 17 with further references.
- 86 Directive 2002/95/EC.
- 87 See the press release of the Environment Committee of 2.6.2010, www.europarl.europa.eu/sides/getDoc.do?language=de&type=IM-PRESS&reference=20100531IPR75278, 21.2.2012.
- 88 Cf. *Eisenberger* (Endnote 37) 18.
- 89 Directive 2011/65/EU.
- 90 COM (2007) 872 of 14.1.2008; see *Eisenberger* (Endnote 37) 21f.
- 91 On this see extensively with further references *Eisenberger* (Endnote 37) 23.

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