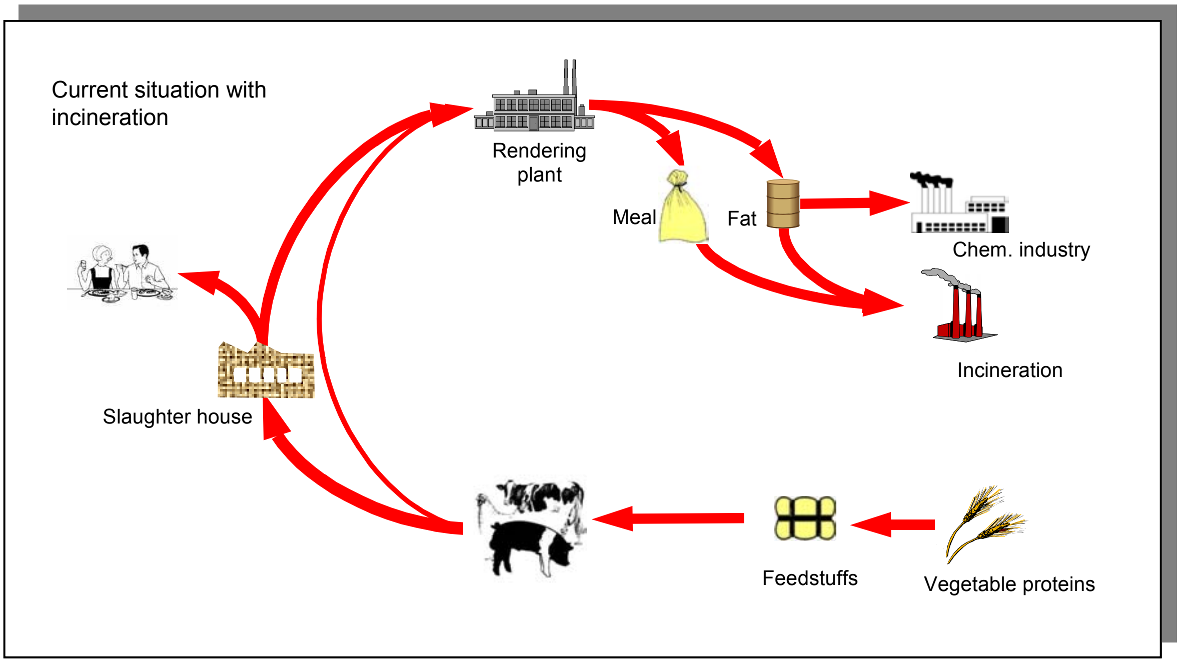
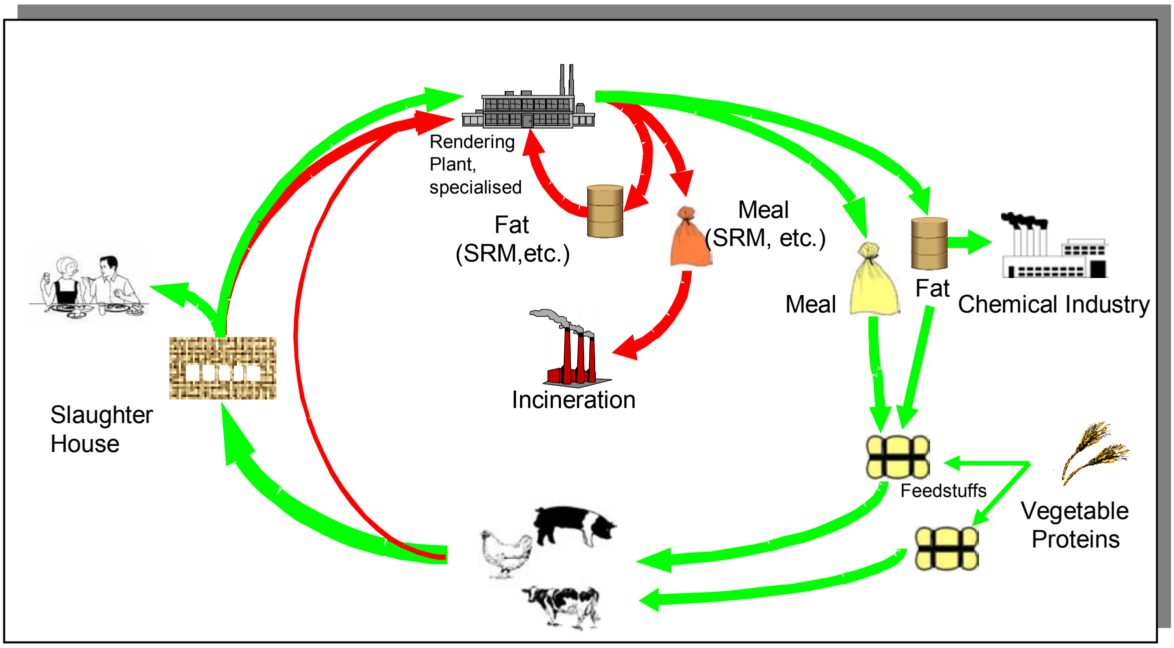
Environmental Protection Encouragement Agency EPEA Internationale Umweltforschung GmbH

Environmental and Social Consequences of the Ban on Feeding Animal Protein





EPEA Internationale Umweltforschung GmbH

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1 Summary

On 4 December 2000 the Council of the European Union ordered to ban the use of processed animal protein (2000/766/EG), which has been in force since the middle of 2001 and was extended indefinitely at the EU Agricultural Ministers' meeting on 19 June 2001. In Germany, a law governing the ban on the feeding of animal protein meal to animals was passed on 2 December 2000, which includes a general ban on feeding products containing animal protein to livestock (in Paragraph 1). This meant that an existing nutrient cycle was broken for reasons of consumer protection.

The Verband Fleischmehlindustrie e.V. (Federation of the German Rendering Industry e.V.) asked EPEA to analyse the possible environmental and social impacts of the ban (as this ban on the use of animal protein in feed shall henceforth be referred to). This report presents the essential results of this analysis. It is in no way the aim of this report to conceal any supposed consumer risks regarding environmental impacts. Therefore this report does not include any close inspection of the risk or the spread of bovine spongiform encephalitis (BSE) or the new variant Creutzfeldt - Jakob Disease (CJD). Information on these topics is widely available from other sources.

1.1 Necessary Protein Substitution

The proteins which make their way to incineration due to the feeding ban, which could be solely from slaughter by-products fit for human consumption, is, for the EU, 1.125 million tonnes of raw protein and 262 500 tonnes of raw protein in Germany.

Should this amount be replaced entirely by soybean cake (raw protein content 44%), approximately 3.2 million tonnes of soy would have to be added at the European level, and 746 000 tonnes in Germany. Imports from Brazil (which would be the main importer because of the desire in Europe for goods which are are not genetically modified) would mean that the soy cultivation areas in Brazil would have to increase by 12%. This means an area of ca. 15 000km^2 - the size of the German Federal State Schleswig-Holstein, and is also equal to ca. 100% of the annual deforestation rate in the Amazon.

1.2 The Consequences of Soy Cultivation in Latin America.

Even if the meat surplus produced in the EU could be reduced in the mid-term through market regulations, there is presently pressure to convert natural areas in Brazil and Bolivia into agricultural land.

This does not only affect the Amazonian rainforests, but also two other areas – the wetland area of Pantanal and the savannah region of the Cerrado. This also has a global impact on biodiversity, since rare animal and plant species are present. Deforestation in the Amazonian rainforests would also have global consequences because of the ensuing decrease in CO_2 absorption (the greenhouse effect). In the Amazon alone, 10,000 million tonnes of CO_2 have so far been, and continue to be, converted – that is 14% of the amount of CO_2 which is broken down by terrestrial plants.

In the Cerrado, the soy cultivation area has been expanded by 20% (to 6 million hectares) in the last two years. In the Amazon there is some, albeit weak, control to try to limit unlawful deforestation, yet in the Cerrado, this is not considered to be important.

The environmental effects for animal and plant life result directly from deforestation and the reduction of habitats and also indirectly from the necessary infrastructures (roads, canals, harbours), or through the emission of agrichemicals into the ecosystem.

As soy is cultivated on large fields with intensive use of machinery, socio-economic problems arise due to the expulsion of small farmers or the loss of agricultural jobs. Conventional soy plantations only require 1.7 employees per hectare, whereas small farms need 30 workers per hectare. In addition, there ensues a displacement of small farmers because of the increasing soy cultivation by large farmers in the north of Brazil.

1.3 Genetically Modified Soycake in the Food Chain.

Germany currently imports roughly 4 million tonnes of soycake. To replace the missing animal raw protein, Germany would have to import 20% more soycake. One can assume that the share of genetically modified soybeans in feed will increase in future.

The latest genetic tests on soycake in feed samples in Austria revelaed a strong increase in genetically modified soybeans (10-60%). This means that more genetically modified organisms have become a reality in the food chain. According to market research carried out by two large foodstuffs manufacturers in Great Britain, over 50% of British consumers want meat that comes from animals, which have not been fed genetically modified feed.

1.4 Fishmeal as Substitute Product

The high protein content and the large amount of complex unsaturated fatty acids and the anti-inflammatory properties make fishmeal, theoretically, very suitable as feed. Fishmeal may, however, be contaminated with problematic substance groups in relevant concentrations.

Although fishmeal from Pacific waters are less affected by this, fishmeal from the highly contaminated European waters, especially the Baltic Sea and the North Sea, may be problematic.

The dioxin contamination in fish and fishmeal from European and American waters is in part clearly higher than in other animal feed. Heavy metal contamination of marine organisms is also well documented. The heavy metal content in fish and mussels in the North Sea partially exceeds the available standards tremendously.

The presence of organo-tin compounds in marine waters has also been found in the fatty tissue of fish. The problem of the contamination of aquatic organisms by phthalates has not yet been discussed in detail in the public. Concentrations as high as 19 mg/kg have been found in fish from contaminated waters for this substance group, which is a suspected endocrine disruptor.

As already mentioned 1.125 million tonnes of raw protein in the EU and 262,500 million tonnes in Germany are necessary in order to replace the high-value edible proteins which are lost to incineration due to the ban.

In order to completely replace this amount with fishmeal, the EU would need to increase their imports of fishmeal by ca. 140% (in Germany 452%). The worldwide fishmeal production would therefore have to be increased by 65% for Germany, and 26% for Europe.

More than a quarter of the world's fish production is already being used exclusively for fishmeal and fish oil. At the same time, 60% of stocks urgently need fisheries management, and 35% are already over-fished. Such a high increase in the demand for fishmeal would therefore thoroughly compound the problem of over-fishing and contribute to a further decrease in marine biodiversity.

Moreover, if more fishing rights are bought out, the increased need for fishmeal in the EU would cause an increase of the current transfer of proteins from waters of numerous developing countries who rely on subsistence fishing. This would also mean that the population of these countries would be deprived of their most important source of animal protein, as well as lose jobs that are associated with the local fisheries.

1.5 Phosphate Loss

The ban does not only affect the protein material flow, but also the phosphorus cycle. Two aspects must be considered here:

- an increase in the demand for phosphates due to the use of fertilisers in the cultivation of the substitutes for animal protein meals
- an increase in the demand for phosphates due to the phosphates in the animal feed.

Should the substitution in the EU be solely with soy, the average amount of fertiliser in soy cultivation needed would mean an extra 81 000 tonnes of phosphates per year, which is ca. 2.3% of the total phosphate used in the EU. At the projected increase in the rate of phosphate use in the world, the phosphate reserves of the earth would last between 60 and 130 years. Animal protein meal produces an annual phosphate source of ca. 275 000 tonnes, however, which is currently incinerated. Additional environmental criticism claims that the heavy metal content of animal protein meal is approximately less than one tenth of the heavy metal content of phosphate fertilisers.

1.6 Destabilisation of Food Markets in Developing Countries through Meat Imports from Industrialised Countries

The export of slaughter by-products in less developed countries hinders the local meat production in that particular area. Slaughter by-products are foodstuffs. Slaughter by-products, particularly from poultry and pigs, are either incinerated after being processed to protein meal or exported. These products are able to strongly destabilise markets in the importing countries.

There are several countries, for example, in which this destabilisation can be documented:

- *poultry market in Surinam:*
  American chicken thighs, which are not demanded there on the foodstuffs market, cross the border as 'dumping' products. This influences the country's economy, which can in no way compete against the pricing pressure.
- *subsidised beef exports from the EU to Burkina Faso:*
  In 1993 the subsidised EU beef export prices were lower than those of local breeders. Following the reduction in subsidies due to international protest, live exports from Burkina Faso to neighbouring countries grew by 60% and the EU meat imports sank by 80%.
- *second-hand clothing exports to Zimbabwe:*
  To bridge a crisis situation resulting from a drought in 1992, European second-hand clothing was exported to Zimbabwe. Although the crisis came to an end in the following years, the export continued. As the local prices were greatly undercut by this, textile-processing factories had to close in Zimbabwe. Even today, one third of jobs lost annually in the country can be traced back to the textile sector.

1.7 Forced-Vegetarian Feeding of Poultry and Pigs

Animal proteinmeal presents a valuable component of feed because of its high mineral and protein content. If animal proteinmeal is incinerated, the components that are thus missing in feedstuffs must be replaced by synthetic substances (amino acids, phosphates, riboflavin) in order to prevent deficiency diseases/illnesses.

1.8 Levels of Use of Animal Proteinmeal

The following possibilities for the use of animal proteinmeal are compared in this report:

- winning of feedstuffs,
- amino acid separation,
- use in biogas plants
- use as fertilizer,
- production of synthesis gas,
- incineration

From a chemical point of view, a decreasing value of the levels of use is to be described as:

- use on a high molecular level,
- use on a low molecular level,
- use on a level of the smallest inorganic molecular units,
- use of the energy content

The biological grade of usefulness of the different use levels diminishes, from:

- animal nutrition (protein, fats, amino acids, fatty acids) *to*
- organic /plant nutrition (NO_3, SO_4, CO_2) *to*
- purely technically useful products, which can no longer be used as biological nutritional (biogas, synthesis gas, electrical current)

Furthermore these levels of use will be compared with regard to the completion of nutrient cycles. A degree of the completion of cycles is assessed by taking the following criteria into account:

(1) degree of conversion of the animal proteinmeal in usable material products

(2) residue of by- and trace-elements (e.g. P, S, Cl, Zn, Ni, Cu, etc.)

(3) amount of unusable materials in the output

(4) amount of pollutants emitted into the environment

(5) degree of toxicity of the pollutants

(6) energy consumption

(7) consumption of scarce resources (excluding energy carriers)

Based on this assessment, the degree of completion of nutrient cycles for the individual levels can be categorized as follows:

• use as feedingstuff	all material flows are directed into a complete cycle
• amino acid separation	low amounts are not directed into a cycle
• use in biogas plants	material flows are partially directed into a cycle
• use as fertiliser	only small amounts are directed into a cycle, and toxic substances appear
• manufacture of synthesis gas	only small amounts are directed into the gas cycle, and toxic substances appear
• incineration	the entire material flow is directed one way without any cycling

This reveals that feeding fulfils the highest degree of nutrient cycling. It must also be stressed here that the rendering sector is in a stage of restructure. After this restructuring, it can be guaranteed that the edible slaughter by-products can be processed in other plants as risk material and fallen stock thereby following strict material flow separation,. During this time, the high-quality form of use of the feeding of slaughter by-products with a high safety system for livestock can be aimed for.

Table 1 enables a comparison of the conditions, which the participants in the chain of the meat economy were subject to before the feeding ban, undergo in the current situation of the ban, and will be subject to in future scenarios of material flow separation.

1.9 Summary

From EPEA's point of view, the reason for the consumer risks which have occurred lies in the lack of a quality standard for feed. This is because in rendering plants the different animal species in the input material flows are not separated, and slaughter by-products, rejected material, fallen stock and specific risk material are also not separated before finding its way to a rendering plant.

EPEA is therefore designing a future scenario of an intelligent and understandable material flow separation for animal proteinmeal, which will then continue to be used in feedstuffs. Such a quality meal can guarantee the valuable use of slaughter by-products with a high safety standard for farm animals and consumers.

Table 1: Comparison of the Different Situations Described

	Before the Ban	Incineration of the Products	Possibilities for Closing the Loop
Rendering Plant (TBA)	- mainly no separation of SNP, SRM, rejected materials, fallen stock	- SRM is separately covered/recorded	- restructuring of the branch, so that at least processing is carried out in clearly separated categories: 1. to SRM 2. according to rejected materials and fallen stock 3. SNP (separated by species where necessary)
Products	- proteinmeal and fats for feed, the chemical industry and export	- disposal of the proteinmeal and animal fat as fuel	- quality products: 1. proteinmeal for the feed industry 2. fats for the chemical and feed industries 3. fuel (fat and meal) from SRM, rejected materials and fallen stock possibly fertiliser from rejected materials
Feed	-insufficient and/or inadequate declaration of the feed (animal meals, animal fats, organic products)	- replace the TBA products with organic protein, with far-reaching consequences for humans and the environment. - no declaration	- quality products of the TBA as feed - minimise extra need for organic proteins - comprehensive declaration
Animal Agriculture	- no controls of the contents of feed which wasn't produced themselves. - possibility of feeding species-specific material	- danger of the inadequate feeding of omnivores	- transparency of the feed, no intra-species feeding - feeding suited to the needs of the animals
Slaughter Firms	- separate between products for end-consumers and SNP	- additional separation of SRM	- separate registration of SNP, SRM, rejected materials, fallen stock - stop impurification of registered material
Humans	- risk of adding problematic materials in the cycle. - no transparency of products. - no acceptance of TBA-Products	- confronted with under-supply of omnivores - situation of the additional requirements for feed production. - no transparency	- risk through enrichment in meal and fats stopped - acceptance of end-consumers through publicity work and transparency