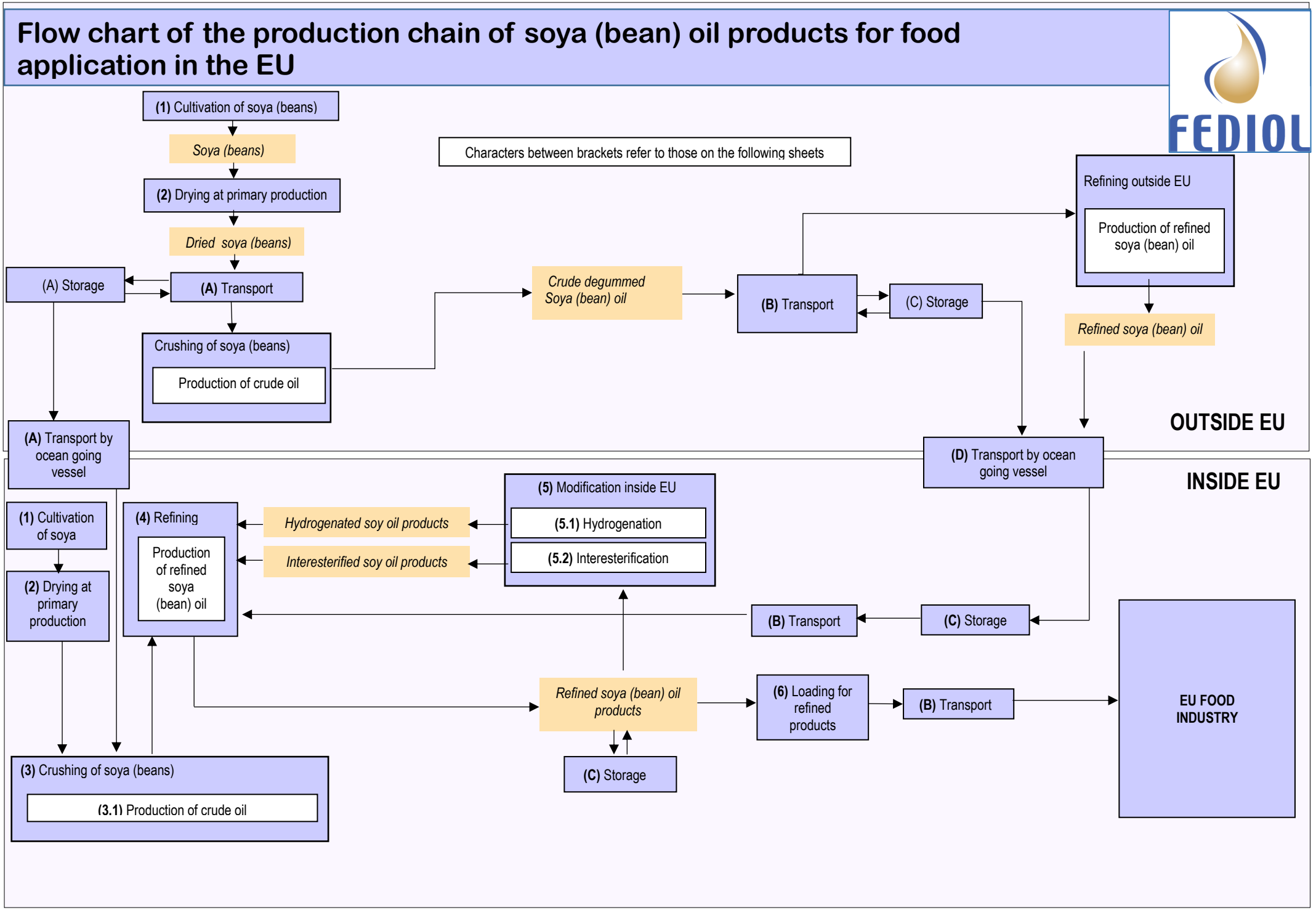
Flow chart of the production chain of soya (bean) oil products for food application in the EU



FEDIOL

Risk assessment of the chain of soya (bean) oil products

			1. Cultivation of soya (beans)*					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Pesticide residues above the EU MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the EU MRL.	C				The countries of export of soya (beans) (USA, Brazil, Argentina and Paraguay) work with positive lists for the use of pesticides during cultivation which, for some substances, may conflict with European pesticide residue legislation. Regular monitoring of pesticides on soya (beans) shows that residue levels remain within legal limits.	EC Regulation No. 396/2005 prohibits putting into circulation commodities that do not comply with the MRLs set in the annexes. EC Regulation No. 178/2006 establishes Annex I that lists the food and feed products for which pesticide residue limits apply. Regulation 149/2008 establishes Annexes II, III and IV that sets the MRLs for the products listed in Annex I. FEDIOL specifications for purchasing soya beans from non-EU origin contain MRLs for certain pesticide residues (09SPEC115). The EU MRLs as referred to in these specifications should be updated with every new contract. The EU Pesticides Database could serve as a reference in this sense		Regulation EC No 882/2004 allows for the processing of non-compliant agricultural commodities into compliant food or feed products under the control of the authorities.
Mycotoxins	C				Mycotoxins are produced by bacteria and or moulds. This can happen during the cultivation of oilseeds.	EC Regulation No. 1881/2006 as amended by Reg. 165/2010 limits aflatoxin B1 in certain oilseeds including soya beans but with the exemption of oilseeds meant for crushing for vegetable oil production.		
Non-EU-authorised GMOs	B				Different pace of approval of new GMOs between EU and third countries from which oilseeds are imported. Risk of traces of non-EU-authorised GMOs ending up in EU imported oilseeds.			This is an issue of legal compliance, rather than one of food safety.

Risk assessment of the chain of soya (bean) oil products

Phytotoxins	C				Soya (beans) may contain weeds (only relevant for protein products).			Visual inspection of soya (beans) is recommended.
Allergenic seeds (wheat, barley)	C				Soya (beans) may contain allergenic seeds such as wheat and barley.			Visual inspection of soya (beans) is recommended.
Cadmium	C					EC Regulation No. 1881/2006 as amended by Reg. 2021/1323 has a limit on cadmium in soybeans. This limit doesn't apply to soybeans for crushing and oil refining, provided that the remaining pressed soybeans are not placed on the market as food.		
Contaminants caused by environmental deposition - dioxin - PAH	C				Wood fires and volcano eruptions may lead to deposition of traces of dioxin and PAH on the oilseed. Use of clay pigeons may lead to deposition of traces of PAH on the oilseed.			

* Assessment of risks of this part of the chain is out of the scope of this document. For more information, see Methodology of the FEDIOL food and feed chain risk assessments as available on the FEDIOL website

2. Drying of soya (beans) at primary production*

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS	CONTROL MEASURE	REMARKS
Contaminants caused by drying - dioxin	C					Code of Practice for the prevention and reduction of dioxin and dioxin-like PCB contamination in foods and feeds (Codex CAC/RCP 62-2006).		Good Manufacturing Practices recommend using fuels which are not generating dioxins and dioxin-like compounds and other harmful contaminants. In case of direct heating, proper burners should be used. Monitoring is regarded necessary to ensure that drying or heating processes do not result in elevated levels of dioxins and dioxin-like PCBs. No use of waste products as a fuel for direct drying.

- PAHs	C				PAHs may be found in crude soya (bean) oil due to bad drying practices.			JECFA (Joint FAO/WHO Expert Committee on Food Additives) recommends replacing direct drying by indirect drying. In case of direct heating, Good Manufacturing Practices recommend not to use waste products as a fuel for direct drying. Temperature and time should be controlled to avoid PAH formation. The equipment has to be kept clean and well maintained. There is a Codex Alimentarius Code of Practice for the Reduction of Contamination of Food with Polycyclic Aromatic Hydrocarbons (PAH) from Smoking and Direct Drying Processes. EC Regulation No. 1881/2006 as amended by Commission Regulation (EU) no 835/2011 sets a 2.0 µg/kg limit for BaP and 10 µg/kg for four PAH in oils and fats intended for direct human consumption or use as an ingredient in foods.

* Assessment of risks of this part of the chain is out of the scope of this document. For more information, see also the footnote on the previous page

Risk assessment of the chain of soya (bean) oil products

			Utilities: soya (beans) crushing, oil refining and processing					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Contaminants such as MOAH in hydraulic oils or lubricants from equipment and/or in thermal heating fluids (THF) from equipment	C	low	high	3	Hydraulic oils, lubricants and thermal heating fluids may contain toxic compounds.	FEDIOL code of practice for the management of mineral oil hydrocarbons presence in vegetable oils and fats intended for food uses (ref 14COD 341).	Critical lubrication/fluid points in the plants are identified and clear procedures for the correct management of the lubrication/fluid systems are in place to prevent/minimize leakages/contact. In all critical lubrication points, only food grade lubricants are used (i.e. lubricants suitable for incidental contact with food or lubricants for direct food contact). Equipment in the production chain requires proper lubrication to operate at optimum performance and reliability. In specific cases where no food grade lubricant with high quality could meet the lubrication requirements of an equipment, a technical solution should be found to avoid leakage/contact. Use steam heating	
Contaminants in water such as Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)	C	low	high	2	Water is used in the crushing and refining process.	Regulation 852/2004/EC is addressing water use.		
Cleaning agents and boiler chemicals	C	medium	medium	3	Cleaning agents and steam (using boiler chemicals) come into contact with the product.		Cleaning agents used in the production system should be flushed. Cleaning agents and boiler chemicals must be suitable for use in the food industry.	

Risk assessment of the chain of soya (bean) oil products

			3. Crushing of soya (beans)					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Toxins from pest control materials	C	low	high	3	Poisoned grain from open boxes could end up in the food chain.		A pest control programme must be applied that is suitable for use in the food chain.	
Toxic compounds from hexane such as benzene	C	low	high	3	Industrial hexane may contain toxic compounds.	Directive 2009/32 and its amendments sets purity criteria for the use of hexane during the crush of oilseeds.	Use of hexane suitable for vegetable oil extraction and so that this use is in compliance with good manufacturing practice. This means its use results only in the presence of residues or derivatives in technically unavoidable quantities posing no danger to human health.	
Foreign material such as glass, wood, metals, etc.	P	medium	medium	3	Foreign material may be present.		A system should be in place that removes foreign material.	

Risk assessment of the chain of soya (bean) oil products

			3.1 Production of crude oil					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Contaminants from filter aids	C	low	high	3	The crude oil can potentially wash contaminants out of the filter aid.	FEDIOL Code of Practice and quality assurance agreement on the purchase and use conditions of fresh bleaching earth and filter aids for vegetable oils and fats refineries and integrated plants (Ref. 16COD137)	Use of filter aids that are suitable for the food industry. Monitoring, establishment of quality and safety criteria for the purchase of filter aids.	
Mineral oils from a failing recovery system	C	medium	medium	3	Low-medium viscosity mineral oil is used for hexane recovery. It is in the interest of the crusher to recover as much hexane as possible, and to thus maintain the recovery system well and thus to avoid that a possible contamination of the mineral oil is washed out and carried to the vegetable oil by hexane.	FEDIOL code of practice for the management of mineral oil hydrocarbons presence in vegetable oils and fats intended for food uses (Ref 14COD341).	Mineral oil of the recovery system must be suitable for incidental contact with food. The prerequisite programme should assure that the contamination of product with non-food grade oils is avoided and that the risk of contamination of the product with is minimised. The prerequisite programme could involve recording of the quantities used.	
Pesticide residues above the EU MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the EU MRL.	C	low	medium	2	. The level of a pesticide residue exceeding the legal limit doesn't necessarily mean a food safety issue.	EC Regulation No. 396/2005 sets limits for residues of pesticides. This regulation allows using a processing/concentration factor for pesticides into processed products, providing food safety is assured. The FEDIOL position on MRLs in vegetable oils and fats (11SAF181) concludes that based on the average oil content in soybeans, ranging from 18-20%, a processing factor of 5 should be used to establish the MRL for fat soluble pesticide residues in soybean oil.		

Risk assessment of the chain of soya (bean) oil products

			4. Refining					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Contaminants in processing aids (such mercury in caustic soda)	C	low	high	3	Processing aids come into contact with the product.		Processing aids that directly come into contact with the oil must be for food use or of food grade quality.	
Dioxin and dioxin-like PCBs	C	low	high	3	A potential source of dioxin contamination for the oil is drying of soybeans and bleaching earth. However, the dosage level of bleaching earth during refining is only 1-3%.	EC Regulation No. 1881/2006, as amended by Commission Regulation No 1259/2011, for vegetable fats and oils sets a dioxin limit of 0.75 ng/kg (WHO-PCDD/F-TEQ) and one for the sum of dioxin and dioxin-like PCBs of 1.25 ng/kg (WHO-PCDD/F-PCB-TEQ). The non-dioxin like PCBs are specified as well. FEDIOL has developed a Code of Practice on the purchase conditions of fresh bleaching earth for oil refining, which includes a maximum limit for dioxin and dioxin-like PCBs of 1,5 ng/kg (WHO-PCDD/F-PCB-TEQ) as upperbound value (16COD137).	Source fresh bleaching earth from suppliers that fulfil the FEDIOL specifications on fresh bleaching earth (16COD137).	Dioxin partly evaporates during distillation.
Pesticide residues above the EU MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the EU MRL.	C	low	medium	2	The level of a pesticide residue exceeding the legal limit doesn't necessarily mean a food safety issue.	EC Regulation No.396/2005 sets limits for residues of pesticides. This regulation allows using a processing/concentration factor for pesticides into processed products, providing food safety is assured.		Refining of the crude oil is a control measure for regulatory compliance. Regulation (EC) 882/2004 allows for the processing of non-compliant agricultural commodities into compliant food or feed products under the control of the authorities.

Risk assessment of the chain of soya (bean) oil products

Microbiological growth	B	low	medium	2	Moisture content (i.e. water activity) in refined oils is too low for bacteria to grow.			
Adventitious presence of allergens from for example peanuts, and products thereof	C	low	high	3	Potential cross contamination. Allergic reactions may occur at very low levels.	Regulation 1169/2011 requires the mandatory labelling of ingredients known to trigger allergies or intolerances. FEDIOL Code of Practice on the production and labelling of certain oils in connection with allergy.	Prerequisite programme to prevent cross contamination.	This risk is only relevant when different types of oils are processed.
Mineral Oil Aromatic Hydrocarbon (MOAH)	C	low	high	3	MOAH contamination of soybean oil can happen throughout various supply chain activities preceding refining of this oil.	During the meeting of the Standing Committee on Novel Food and Toxicological Safety of the Food Chain on 23 June 2020 the European Commission set an action level of 1 mg/kg per MOAH C-fraction for infant formula and follow-on formula.		
PAHs	C	low	high	3	BaP may be found in crude soya (bean) oil due to bad drying practices. BaP is an indicator for PAHs.	EC Regulation No. 1881/2006 sets a maximum limit at 2.0 µg/kg limit for BaP and at 10 µg/kg for the sum of four PAH in oils and fats intended for direct human consumption or use as an ingredient in foods (excluding cocoa butter and coconut oil).	Use of active carbon to verify compliance with EU legislation.	Occurrence depends on origin of beans.
Glycidyl esters (GE)	C	Medium	High	4	Glycidyl esters can arise in refined oils and fats during the refining process.	FEDIOL Review of mitigation measures on MCPD esters and glycidyl esters (Ref 15SAF108). Commission Reg (EU) 2018/290 amending Regulation (EC) 1881/2006. Codex Alimentarius Code of Practice (COP) for the reduction of 3-Monochloropropane-1,2- diol esters (3-MCPDE) and Glycidyl Esters (GE) in	Implementation of mitigation measures tailor-made to the refinery and commodity at stake throughout the refining process. FEDIOL members committed to a max level of GE of 1 mg/kg in the oils and fats that they put on the market for food as of September 2017.	See the dedicated FEDIOL webpage on 2, 3 MCPD- and GE.

						refined oils and food products made with refined oils.		
3-MCPD esters	C	medium	high	4	3-MCPD esters are substances formed during the refining process.	FEDIOL Review of mitigation measures on MCPD esters and glycidyl esters (Ref 15SAF108). Regulation (EU) 2020/1322 amending Regulation (EC) 1881/2006. Codex Alimentarius Code of Practice (COP) for the reduction of 3-Monochloropropane-1,2- diol esters (3-MCPDE) and Glycidyl Esters (GE) in refined oils and food products made with refined oils.	Implementation of mitigation measures tailor-made to the refinery and commodity at stake throughout the refining process.	See the dedicated FEDIOL webpage on 2, 3 MCPD- and GE.
Lead	C	Very low	High	2	Lead has poor oil solubility.	EC Regulation 1881/2006 limits lead in fats and oil to 0.1 mg/kg wet weight.		

5. Modification (general)

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS	CONTROL MEASURE	REMARKS
Foreign materials such as glass, metals, etc.	P	medium	medium	3	Foreign materials may be present.		Filter before loading.	
Contaminants in processing aids such as heavy metals	C	low	high	3	Processing aids come into contact with the product.		Processing aids that directly come into contact with the oil must be for food use or of food grade quality.	

5.1 Hydrogenation

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR	CONTROL MEASURE	REMARKS

						CONTRACT TERMS		
Traces of nickel remaining in the hydrogenated product after filtration.	C	medium	medium	3	Nickel used as a catalyst may be incompletely removed after filtration.		Proper post-refining or post-bleaching.	France has a legal limit of nickel in oil for food of 0.2 ppm. EFSA has an opinion on nickel in food

5.2 Interesterification

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS	CONTROL MEASURE	REMARKS
Formation of hazardous by-products	C	medium	medium	3	Overdosing catalyst can lead to formation of hazardous by-products.		Controlling the amount of sodium methylate.	

6. Loading of refined products

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS	CONTROL MEASURE	REMARKS
Foreign materials such as glass, wood, metals, etc	P	medum	medium	3	Foreign bodies may be present.	FEDIOL Code of working practice for bulk road and tank container transport of fats and oils for direct food use	Filter before loading. A quality plan should require the loading of tank cars with refined oils and derived products under a roof.	
Overdose of additives	C	low	Medium	2	Misuse or overdosing of additives may occur.	Regulation (EC) 1333/2008		
Adventitious presence of allergens (from soy lecithin, peanuts, nuts, sesame seeds and products thereof)	C	low	high	3	Potential cross contamination. Allergic reactions may occur at very low levels.	Regulation EU No 1169/2011 requires the mandatory labelling of ingredients known to trigger allergies or intolerances. FEDIOL Code of Practice on the Production and Labelling of certain oils in connection with allergy.	Prerequisite programme to prevent cross contamination.	This risk is only applicable when different types of oils are processed and / or additives are used.

Risk assessment of the chain of soya (bean) oil products

			A. Storage and transport of soybeans					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Toxins from pest control materials	C	Low	High	3	Poisoned grain from open boxes could end up in the food chain.		A pest control programme must be applied that is suitable for use in the food chain.	
Pesticide residues above the EU MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the EU MRL.	C	Medium	Medium	3	Post-harvest use of pesticides on oilseeds is critical due to the limited time that is available for the pesticides to break down. The countries of export of oilseeds work with positive lists for the use of pesticides which, for some substances, may conflict with European legislation, particularly in the case of soft seeds such as those of sunflowers.		Transport and storage companies must use pesticides correctly and document this. Otherwise they must verify that the levels of the residues of the pesticides used during transport and storage comply with EU legislation.	
Contamination by the previous cargo during the transport by farm cart, truck or barge or ocean going vessel	C	Low	High	3	Transport of oilseeds and oilseed meals usually does not take place in means of transport that are dedicated to the transport of food or feed.		Transport companies must clean farm carts, trucks, barges and ocean-going-vessels before loading. Inspection on cleanliness before loading.	
Contamination by the previous cargo during storage	C	Low	High	3	Oilseeds and oilseed meals may be contaminated with mycotoxin containing previous loads.		Storage companies must clean sites before use and must inspect them on cleanliness before use.	
Mineral oil as anti dusting agent on soya (beans)	C	Medium	Medium	3	For dust prevention, the USA allows the spraying of white oils (paraffins) on soya (beans) at levels of up to 200 ppm. In South America soya (bean) oil is used.		Check incoming soybeans from the USA.	

B. Transport of soya bean oil and derived products for food application by tank car, rail tank, barge or coaster (excluding ocean going vessel).

HAZARD	CAT.	CHANCE	SERIOUSNESS	RISK CLASS.	JUSTIFICATION	LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS	CONTROL MEASURE	REMARKS
Contamination by non-food previous cargo								
- In the case of transport by tank cars, rail tanks and barges outside of the EU	C				Tank cars and barges may have been used for non-food compatible products such as petrochemicals.			Tank cars and barges that are not dedicated to the transport of foodstuff should have undergone a validated cleaning procedure.
- In the case of transport by tank cars, tank containers, rail tanks and barges following EU standards for the transport of food stuffs	C	low	high	3	Transport of vegetable oils for food application is by means of transport that are dedicated to food stuffs.	The Food Hygiene Regulation EC No. 852/2004 requires the transport of liquid food stuffs by tank cars, rail tanks and barges to be dedicated to that of food stuffs. **Oils for processing:** FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter A). **Oils for direct food use:** FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).	Make sure a means of transport is marked "for foodstuffs only".	
- In the case of transport by tank coasters following EU standards for the transport of food stuffs	C	low	high	3	**Oil to be processed** Coasters carrying oils and fats that are still to be processed and that have stainless steel tanks must have as immediate previous cargo one that appears on the EU list of Acceptable Previous Cargoes. **Oil for direct use**	Regulation EU No 579/2014 on bulk transport of oils and fats by sea. FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter B) (including FOSFA operational procedures).	Check previous cargoes via FEDIOL practical guide to previous cargo(es) for means of transport and tank lining (Ref 14COD153). FOSFA certificate of compliance, cleanliness and suitability of Ship's tanks issued by a FOSFA Member	

					Tank coasters carrying refined oils and fats for direct food use during short sea voyages in the EU must have as three previous cargoes a product that is foodstuff and the tanks must be of stainless steel or epoxy coated (mild steel not allowed)		Superintendent. FOSFA combined Masters certificate signed by the Captain/First Officer or an equivalent statement signed by the ship's owner or authorised agent, applicable before any loading or cargo transfer.	
Contamination by cleaning agents								
- Residues of detergents used to clean tank cars, rail tanks and barges used for the transport of chemicals	C	medium	medium	3	Increased risk at cleaning stations that clean both food and chemical tanks on one site.	**Oils for processing:** FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter A). **Oils for direct use**: FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).	Apply good practices for cleaning of tanks .	
- Residues of detergents used to clean tank coasters used for the transport of chemicals	C	medium	medium	3	Increased risk in case coaster is not dedicated to foodstuff. This can be the case with the transport of crude vegetable oils and fats by coaster (previous cargo to be on EU list of Acceptable Previous Cargoes in case of stainless steel tank). Coasters that are carrying refined vegetable oils and fats are dedicated to the transport of food stuffs and are cleaned with water. In these cases the risk of contamination with residues of detergents is low.	FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 014COD152 chapter B) (including FOSFA operational procedures).	FOSFA certificate of compliance, cleanliness and suitability of Ship's tanks issued by a FOSFA Member Superintendent. FOSFA combined Masters certificate signed by the Captain/First Officer or an equivalent statement signed by the ship's owner or authorised agent, applicable before any loading or cargo transfer.	
Heating or cooling fluids from equipment								
- In the case of tank cars	C	low	medium	2	Stainless steel tanks are used which are heated with cooling water from the motor through a system of double walls (and not coils).	**Oils for processing:** FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (14COD152 chapter A).	Use of thermal heating fluids in direct heating systems is forbidden.	

Risk assessment of the chain of soya (bean) oil products

						Oils for direct use: FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).		
- n the case of rail tanks, tank barges	C	low	high	3	Toxic thermal heating fluids may still be used. However, due to the relatively low heating temperatures applied during transport, the chance of leakage of thermal heating fluids into the product is low.	FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (14COD152 chapter A).	Heating coils of rail tanks must be of stainless steel. Thermal heating fluids in direct heating systems is forbidden. The transporter of the oil must provide for documentation on possible net losses of thermal heating fluids and analyse accordingly if necessary.	The use of hot water or steam heating is recommended.
- In the case of tank coasters	C	low	high	3	Toxic thermal heating fluids may still be used. However, due to the relatively low heating temperatures applied during transport, the chance of leakage of thermal heating fluids into the product is low.	FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (14COD152 chapter B) (including FOSFA operational procedures).	If thermal heating fluids have been used, the transporter of the oil must provide for documentation on possible net losses and analyse accordingly if necessary.	
Foreign material such as glass, wood, metals, etc.	P	medium	medium	3		**Oils for direct use:** FEDIOL Code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).	A quality plan should require the loading of tank cars with refined oils under a roof.	

Risk assessment of the chain of soya (bean) oil products

			C. Storage of crude or refined oil					
HAZARD	**CAT.**	**CHANCE**	**SERIOUS NESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Contamination due to lack of segregation (contamination from previous cargoes, use of incorrect joining, shared equipment)	C	low	high	3	This risk classification applies to terminals that store both chemicals and vegetable oils. Less risk is involved when the tank terminal applies the EU list of acceptable previous cargoes during sea transport to the storage of vegetable oils. Least risk is involved when the vegetable oils are stored in tanks that are dedicated to the storage of foodstuffs.	Terminals in the EU that store oils and fats for food application are obliged to apply HACCP (Regulation EC No. 852/2004)	Food or feed dedication of storage tanks. Otherwise, storage tanks must at least adhere to the EU rules on previous cargoes that have been set up for sea transport in Regulation EU No 579/2014.	
Contamination by cleaning agents	C	low	high	3	This risk classification applies to terminals that store both chemicals and vegetable oils. They may abstain from using cleaning agents that are suitable for use in the food industry. For tank terminals in the EU that apply HACCP and that keep the storage of vegetable oils and chemicals separated, the chance of using the wrong cleaning agents is very low.		Cleaning agents must be suitable for use in the food industry.	
Solvent from coating	C	low	high	3	Solvents from virgin coatings migrating to the oil, which may end up in the fatty acid distillates during refining		Do proper analyses on maiden oil storage before accepting and monitor refining	
Overdose of additives	C	low	medium	2	Additives allowed for food oil applied to oil going to feed –or vice versa- for which use they may not have been approved.			

			D. Transport of soya bean oil by ocean going vessel					
HAZARD	**CAT.**	**CHANCE**	**SERIOUSNESS**	**RISK CLASS.**	**JUSTIFICATION**	**LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS**	**CONTROL MEASURE**	**REMARKS**
Transport contamination								
- Contamination by non-food previous cargoes present in tanks or pipes	C	medium	medium	3	Bulk vegetable oils and fats imported into the EU undergo refining before they are delivered for food application. Ocean going vessels carrying these oils and fats into the EU must have as the immediate previous cargo a product that is either a foodstuff or a product appearing on the EU list of accepted immediate cargoes of Commission Regulation (EU) No. 579/2014.	Regulation 579/2014 (Derogation to EC Regulation No. 852/2004) requires that previous loads have to be checked. FOSFA contracts oblige the seller to inform the buyer what the three preceding cargoes have been during the sea transport of oils and fats. FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 014COD152 chapter B) (including FOSFA operational procedures). The EU has not regulated the sea transport of oils and fats for feed application.	FOSFA certificate of compliance, cleanliness and suitability of Ship's tanks issued by a FOSFA Member Superintendent. FOSFA combined Masters certificate signed by the Captain/First Officer or an equivalent statement signed by the ship's owner or authorised agent, applicable before any loading or cargo transfer. The use of dedicated pipe lines at loading and unloading.	
- Contamination by cleaning agents	C	low	low	1	Tanks of ocean going vessels are cleaned with sea water.			
Solvent from coating	C	low	high	3	Solvents from virgin coatings migrating to the oil, which may end up in the fatty acid distillates during refining		Do proper analyses on maiden oil voyages before accepting and monitor refining	
Thermal heating fluids (THF) from equipment	C	low	high	3	Toxic thermal heating fluids may still be used. However, due to the relatively low heating temperatures applied during transport, the chance of leakage of thermal heating fluids into the product is low.	FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (including FOSFA operational procedures) (14COD152 chapter B).	If thermal heating fluids have been used, the transporter of the oil must provide for documentation on possible net losses and analyse accordingly if necessary.	The use of water and steam heating is recommended.
Hydraulic oils from portable	C	low	high	3	Hydraulic oils from portable pumps		The use of portable pumps with clear	Hydraulic motors that are

pumps					may be toxic.		separation of hydraulic motor from pump. If not, hydraulic oils of food grade quality must be used.	directly linked to the pump allow for unwanted leakages of hydraulic oil into the vegetable oil in case of seal failure. For more on food grade lubricants see FEDIOL code of practice for the management of mineral oil hydrocarbons presence in vegetable oils and fats intended for food uses (ref 14COD 341).
Precursor of 3-MCPDE	C	Low	High	3	Increased levels of the 3-MCPDE precursor chlorine in the oil due to exposure in the tank of the oil to remains of salt water from inadequate subsequent cleaning with fresh water and/or drying.		FOSFA cleaning procedures	