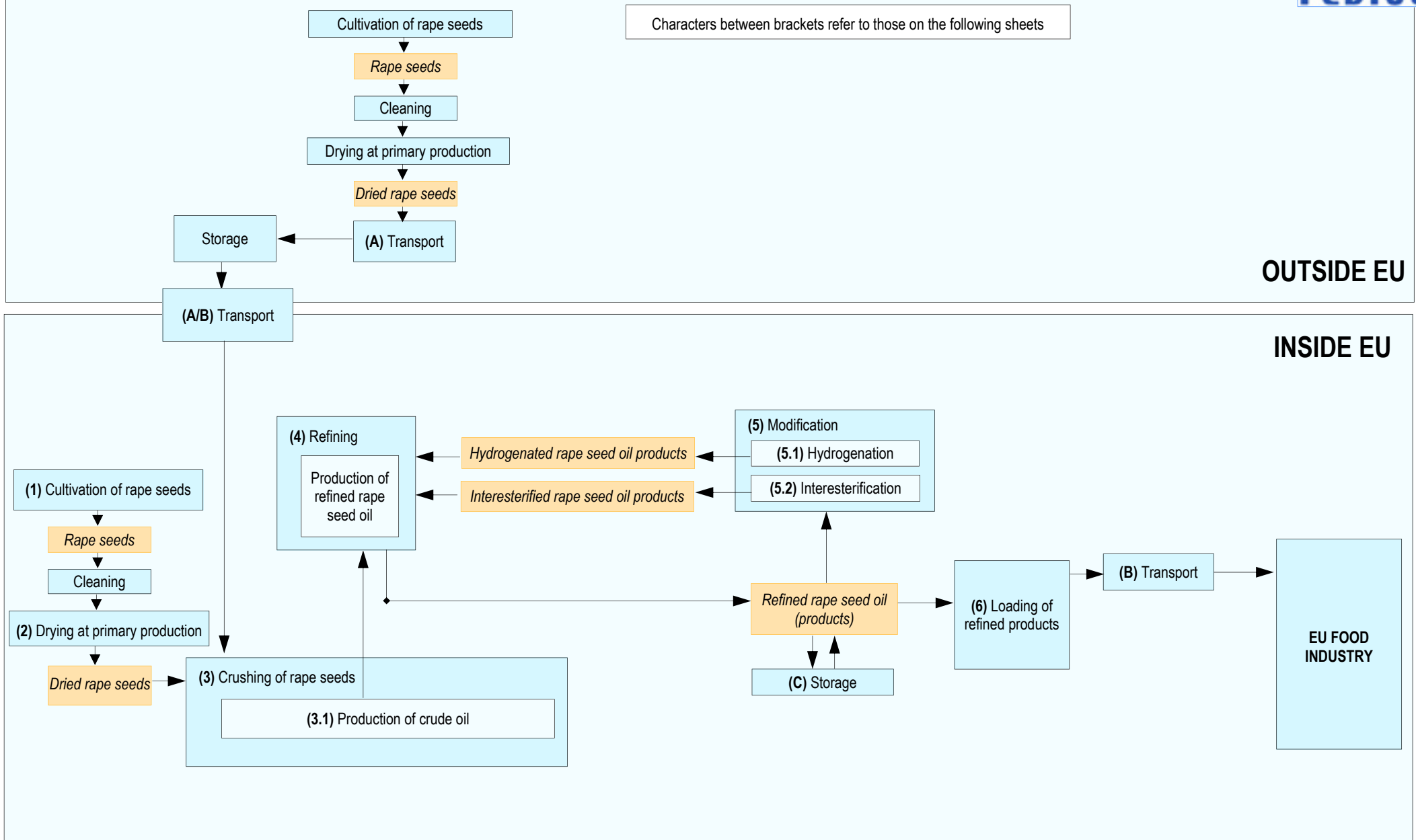


# Flow chart of the production chain of rape seed oil products for food application in the EU



Characters between brackets refer to those on the following sheets



## Risk assessment of the chain of rape seed oil products

|   |      |        | 1. Cultivation of rape seeds* |             |  |  |  |                 |  |
|---|------|--------|-------------------------------|-------------|--|--|--|-----------------|--|
| HAZARD  | CAT. | CHANCE | SERIOUSNESS                   | RISK CLASS. |  | JUSTIFICATION  | LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS  | CONTROL MEASURE | REMARKS  |
| <b>Pesticide residues above the EU MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the EU MRL.</b> | C    |        |                               |             |  | <p>Third countries of export of rape seeds work with positive lists for the use of pesticides during cultivation which, for some substances, may conflict with European pesticide residue legislation.</p> <p>In rapeseeds originating from wet areas the level of fungicides may be high.</p> | <p>Regulation EC No. 396/2005 prohibits putting into circulation commodities that do not comply with the MRLs set in the annexes.</p> <p>Regulation EC 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.</p> <p><a href="#">FEDIOL specifications for purchasing rape seeds from non-EU origin contain MRLs for certain pesticide residues (11SPEC098).</a></p> |                 | 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. |
| <b>Non-EU-authorized GMOs</b>   | B    |        |                               |             |  | Different pace of approval of new GMOs between EU and third countries from which oilseeds are imported. Risk of traces of non-EU-authorized GMOs ending up in EU imported oilseeds.  |  |                 | This is an issue of legal compliance, rather than one of food safety.  |
| <b>Mycotoxins</b>   | C    |        |                               |             |  | Mycotoxins are produced by bacteria and or moulds. This can happen during the cultivation of oilseeds.   | EC Regulation No. 1881/2006 and its amendment Reg. 165/2010 limits aflatoxin B1 in certain oilseeds including rapeseeds.   |                 |  |
| <b>Phytotoxins</b>  | C    |        |                               |             |  | Rape seeds may contain weeds (only relevant for protein products).   |  |                 | Visual inspection of rape seeds.   |
| <b>Contaminants caused by environmental deposition</b><br>- dioxin<br>- PAH   | C    |        |                               |             |  | Wood fires and volcano eruptions may lead to deposition of traces of dioxin and PAH on the oilseed.<br>Use of clay pigeons may lead to deposition of traces of PAH on the oilseed.   |  |                 |  |

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

## Risk assessment of the chain of rape seed oil products

|                               |      |        | 2. Drying of rape seeds 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    |        |  |             |  | Burning of waste may result in dioxin formation. Up to now the crushers have found dioxin levels in crude rapeseed oil to be lower than detection limit. | 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.<br><br>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 rapeseed 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. EC Regulation No. 1881/2006 and its amendment Commission Regulation (EU) no 835/2011 sets maximum limits at 2.0 µg/kg for BaP and at 10 µg/kg for the sum of four PAH in oils and fats (excluding cocoa butter and coconut oil) intended for direct human consumption or use as an ingredient in foods. |

\* Assessment of risks in 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 rape seed oil products

|  |      |        | Utilities: rape seeds crushing, oil refining and processing |             |  |  |  |   |         |
|--|------|--------|---|-------------|--|--|--|---|---------|
| HAZARD   | CAT. | CHANCE | SERIOUSNESS   | RISK CLASS. |  | JUSTIFICATION  | LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS  | CONTROL MEASURE   | REMARKS |
| Hydraulic oils or lubricants from equipment and/or thermal heating fluids (THF) from equipment   | C    | low    | high  | 3           |  | Hydraulic oils, lubricants and thermal heating fluids may contain toxic compounds.     | <a href="#">FEDIOL code of practice for the management of mineral oil hydrocarbons presence in vegetable oils and fats intended for food uses (ref 14COD 341).</a> | 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.<br>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).<br>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 particular lubrication requirements of an equipment, a technical solution should be found to avoid leakage/contact.<br>Use steam heating. |         |
| Contaminants in water such as perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) | C    | low    | medium  | 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 rape seed oil products

|  |      |        | 3. Crushing of rape seeds |             |  |  |  |   |         |
|--|------|--------|---------------------------|-------------|--|--|--|---|---------|
| 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/EC and its amendments sets purity criteria for the use of hexane during the crush of oilseeds. | Food grade hexane must be used. An extraction solvent is considered as being used in compliance with good manufacturing practice if its use results only in the presence of residues or derivatives in technically unavoidable quantities presenting 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 rape seed 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.   | <a href="#">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)</a>  | Use of filter aids that are suitable for the food industry.<br><br>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. | <a href="#">FEDIOL code of practice for the management of mineral oil hydrocarbons presence in vegetable oils and fats intended for food uses (Ref 14COD341).</a>   | Mineral oil of the recovery system must be suitable for incidental contact with food.<br><br>The prerequisite programme should assure that the contamination of product with such oils is avoided and that the risk of contamination 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.   | Regulation EC No. 396/2005 sets limits for residues of pesticides. This regulation allows using a processing/concentration factor for pesticides into processed products, provided food safety is assured. <a href="#">The FEDIOL position on MRLs in vegetable oils and fats (11SAF181)</a> concludes that based on the average oil content in rape seeds, ranging from 40%-45%, a processing factor of 2.5 should be used to establish the MRL for fat soluble pesticides in rape seed oil. |   |         |

## Risk assessment of the chain of rape seed 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 as 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 rape seeds and bleaching earth. However, the dosage level of bleaching earth during refining is only 1-3%. | Regulation EC No. 1881/2006 and its amendment Commission Regulation (EU) 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.<br><br><a href="#">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).</a> | <a href="#">Source fresh bleaching earth from suppliers that fulfil the FEDIOL specifications on fresh bleaching earth (16COD137).</a> | 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.   | Regulation EC 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.<br><br>Regulation (EC) 882/2004 allows for the processing of non-compliant agricultural commodities into compliant food or feed products under the control of the |

## Risk assessment of the chain of rape seed oil products

|  |   |          |        |   |  |   |   |  | authorities.   |
|--|---|----------|--------|---|--|---|---|--|--|
| 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 soybeans and peanuts, 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.<br><br><a href="#">FEDIOL Code of Practice on the production and labelling of certain oils in connection with allergy.</a> | Prerequisite programme to prevent cross contamination.   | This risk is only relevant when different types of oils are processed. |
| PAHs   | C | medium   | high   | 4 |  | BaP may be found in crude rapeseed oil due to bad drying practices. BaP is an indicator for PAHs. | Regulation EC No. 1881/2006 sets maximum limits at 2.0 µg/kg for BaP and at 10 µg/kg for the sum of four PAH in oils and fats (excluding cocoa butter and coconut oil) intended for direct human consumption or use as an ingredient in foods.      | Use of active carbon to verify compliance with EU legislation.   | Occurrence depends on origin of seeds.                                 |
| Glycidyl esters (GE)   | C | Medium   | High   | 4 |  | Glycidyl esters can arise in oils and fats during the refining process.                           | FEDIOL Review of mitigation measures on MCPD esters and glycidyl esters (Ref 15SAF108).<br><br>Commission Reg (EU) 2018/290 amending Regulation (EC) 1881/2006.<br><br>A Codex Alimentarius Code of Practice is under construction.                 | 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. | <a href="#">See the dedicated FEDIOL webpage on 2, 3 MCPD- and GE.</a> |
| 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)<br>A Codex Alimentarius Code of Practice is under construction.  | Implementation of mitigation measures tailor-made to the refinery and commodity at stake throughout the refining process.  | <a href="#">See the dedicated FEDIOL webpage on 2, 3 MCPD- and GE.</a> |
| 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.  |  |  |
| Erucic acid  | C | Low      | high   | 3 |  | There are rapeseed varieties  | EC Regulation 1881/2006 limits  | Source rapeseed with   |  |



## Risk assessment of the chain of rape seed oil products

|  |      |        |             |             |  | with elevated levels of erucic acid.                | erucic acid in vegetable oils and fats to 50 g/kg.    | sufficiently low levels of erucic acid.   |         |
|--|------|--------|-------------|-------------|--|---|---|---|---------|
| <b>5 Modification (general)</b>                      |      |        |             |             |  |   |   |   |         |
| 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. |         |

## Risk assessment of the chain of rape seed oil products

|  |      |        | 5.1 Hydrogenation |             |  |  |   |   |  |
|--|------|--------|-------------------|-------------|--|--|---|---|--|
| HAZARD   | CAT. | CHANCE | SERIOUSNESS       | RISK CLASS. |  | JUSTIFICATION  | LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS | CONTROL MEASURE                         | REMARKS  |
| Traces of nickel remaining in the hydrogenated product after filtration. | C    | medium | medium            | 3           |  | Nickel is used as a catalyst. Traces may remain in the oil after filtration. |   | Proper post-refining or post-bleaching. | France has a legal limit of nickel in oil for food of 0.2 ppm. |

## Risk assessment of the chain of rape seed oil products

|  |      |        | 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    | medium | medium                        | 3           |  | Foreign bodies may be present.  | <a href="#">FEDIOL Code of working practice for bulk road and tank container transport of fats and oils for direct food use</a>   | Filter before loading.<br><br>A quality plan should require the loading of tank cars with refined oils under a roof. |  |
| Microbiological growth   | B    | low    | medium                        | 2           |  | Moisture content (i.e. water activity) in refined oils is too low for bacteria to grow. |   |  |  |
| Misuse of additives  | C    | low    | medium                        | 2           |  | Misuse or overdosing of additives may occur.  | Regulation (EC) No 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.<br><br><a href="#">FEDIOL Code of Practice on the Production and Labelling of certain oils in connection with allergy.</a> | 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 rape seed oil products

| A. Transport of rape seed 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   |
| Microbiological growth   | B    | Low    | High        | 3           | Residual water in a tank can make pathogens grow.   |  | Control drying after cleaning.   |   |
| Contamination by previous cargo  |      |        |             |             |   |  |  |   |
| - 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. |
| - 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.<br><br><b>Oils for processing:</b><br><a href="#">FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter A).</a><br><br><b>Oils for direct food use:</b><br><a href="#">FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).</a> | Make sure a means of transport is marked "for foodstuffs only".  |   |
| - Tank coasters following EU standards for the transport of food stuffs  | C    | low    | high        | 3           | <b>Oil to be processed</b><br>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 | Regulation EU No 579/2014 on bulk transport of oils and fats by sea.<br><br><a href="#">FEDIOL Code of Practice for</a>  | <a href="#">Check previous cargoes via FEDIOL practical guide to previous cargo(es) for means of transport and tank lining (Ref 14COD153).</a> FOSFA |   |

## Risk assessment of the chain of rape seed oil products

|   |   |        |        |   |  |  |   |  |
|---|---|--------|--------|---|--|--|---|--|
|   |   |        |        |   | <p>appears on the EU list of Acceptable Previous Cargoes.</p> <p><b>Oil for direct use</b><br/>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)</p>   | <p><a href="#">the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter B) (including FOSFA operational procedures).</a></p>   | <p>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.</p>       |  |
| <b>Contamination by cleaning agents</b>   |   |        |        |   |  |  |   |  |
| - Residues of detergents used to clean tank cars, rail tanks and barges used for the transport of chemicals | C | medium | medium | 3 | <p>Increased risk at cleaning stations that clean both food and chemical tanks on one site.</p>  | <p><b>Oils for processing:</b><br/><a href="#">FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (Ref 14COD152 chapter A).</a></p> <p><b>Oils for direct use:</b><br/><a href="#">FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).</a></p> | <p>Apply good practices for cleaning of tanks</p>   |  |
| - Residues of detergents used to clean tank coasters used for the transport of chemicals                    | C | medium | medium | 3 | <p>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.</p> | <p><a href="#">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).</a></p>  | <p>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.</p> |  |
| <b>Heating or cooling fluids from equipment</b>   |   |        |        |   |  |  |   |  |

## Risk assessment of the chain of rape seed oil products

|   |   |        |        |   |  |  |   |   |
|---|---|--------|--------|---|--|--|---|---|
| - 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).  | <p><b>Oils for processing:</b><br/> <a href="#">FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (14COD152 chapter A).</a></p> <p><b>Oils for direct use:</b><br/> <a href="#">FEDIOL code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).</a></p> | Use of thermal heating fluids in direct heating systems is forbidden.   |   |
| - 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. | <a href="#">FEDIOL Code of Practice for the transport in bulk of oils and fats into or within the European Union (14COD152 chapter A).</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. |
| - 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. | <a href="#">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).</a>  | 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.  |   |
| <b>Foreign material such as glass, wood, metals, etc.</b> | P | medium | medium | 3 |  | <p><b>Oils for direct use:</b><br/> <a href="#">FEDIOL Code of working practice for bulk road and tank container transport of fats and oils for direct food use (Ref 07COD138).</a></p>  | A quality plan should require the loading of tank cars with refined oils under a roof.  |   |

## Risk assessment of the chain of rape seed oil products

| B. Storage of crude or refined oil   |      |        |             |             |  |  |   |   |         |
|--|------|--------|-------------|-------------|--|--|---|---|---------|
| HAZARD   | CAT. | CHANCE | SERIOUSNESS | RISK CLASS. |  | JUSTIFICATION  | LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS   | CONTROL MEASURE   | REMARKS |
| <b>Contamination due to lack of segregation</b><br>(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. |         |
| <b>Contamination by cleaning agents</b>  | 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.  |         |
| <b>Solvent from coating</b>  | 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.   |         |
| <b>Misuse of additives</b>   | 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.   |   |   |         |

## Risk assessment of the chain of rape seed oil products

|   |      |        | C. Transport of rape seed oil by ocean going vessel |             |  |   |   |  |
|---|------|--------|---|-------------|--|---|---|--|
| HAZARD  | CAT. | CHANCE | SERIOUSNES S  | RISK CLASS. | JUSTIFICATION  | LEGISLATION, INDUSTRY STANDARDS AND/OR CONTRACT TERMS   | CONTROL MEASURE   | REMARKS  |
| <b>Transport contamination</b>                                |      |        |   |             |  |   |   |  |
| - Contamination by 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 Directive 96/3/EC. | Regulation 579/2014 (Derogation to EC Regulation No. 852/2004) requires that previous loads have to be checked.<br><br>FOSFA contracts oblige the seller to inform the buyer what the three preceding cargoes have been during the sea transport of oils and fats.<br><br><a href="#">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).</a><br><br>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.<br><br>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.   |   |   |  |
| <b>Solvent from coating</b>                                   | 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  |  |
| <b>Thermal heating fluids (THF) from equipment</b>            | 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.   | <a href="#">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).</a>   | 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. |



## Risk assessment of the chain of rape seed oil products

|                                    |   |     |      |   |  |  |  |  |
|------------------------------------|---|-----|------|---|--|--|--|--|
| Hydraulic oils from portable pumps | C | low | high | 3 | Hydraulic oils from portable pumps may be toxic. |  | The use of portable pumps with clear separation of hydraulic motor from pump. If not, hydraulic oils of food grade quality must be used. | Hydraulic motors that are directly linked to the pump allow for unwanted leakages of hydraulic oil into the vegetable oil in case of seal failure. |
|------------------------------------|---|-----|------|---|--|--|--|--|