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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

DRISCAL D POLYMER

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Director
NICNAS

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DRISCAL D POLYMER

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
CHEVERON PHILLIPS CHEMICALS AUSTRALIA PTY LTD, (ABN 29 107 015 896) SUITE 409, 685 BRUKE ROAD, CAMBERWELL VIC 3124

NOTIFICATION CATEGORY
Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Polymer Constituents, Residual Monomers/Impurities

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
US

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
DRISCAL D POLYMER

MOLECULAR WEIGHT

Number Average Molecular Weight (Mn)	682,000
Weight Average Molecular Weight (Mw)	11,936,000
Polydispersity Index (Mw/Mn)	17.5
% of Low MW Species < 1000	0
% of Low MW Species < 500	0

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Not Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The polymer will be introduced into Australia as a dry powder (100 %).

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	30	30	30	30	30

USE
The notified polymer will be introduced as drilling mud additive in onshore drilling sites in Queensland, South Australia and Western Australia and offshore site in Northern Territories and Northwest shelf of Western Australia. It is added as dry powder to drilling mud for high temperature viscosity and fluid loss control.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The polymer will be imported into Australia as dry powder in polyethylene lined 12 or 25 kg paper bags. The bags are imported into Victoria and transported to drilling sites by trucks.

At the drilling site, the polymer bag is opened and the polymer powder is added to a hopper connected to a pipe transporting drilling mud to the centre of the drill shaft. The polymer mixes with the mud and flows to the drill bit. The main role of the mud suspension containing the notified polymer is to prevent the loss of drilling fluid to the surrounding rock formation and high temperature viscosity control in the well. From the drill bit the mud suspension containing the notified polymer is pushed to surface of well. The mud containing the notified polymer coats the bore of the well reduces water flow into the well.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

Dermal and ocular exposure to the powder may occur during the addition of notified polymer to the drilling mixture. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

6.2. Summary of Public Exposure

The notified polymer is intended only for use in industry (specialized) and hence the general public will not be exposed to the notified polymer.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

As the notified polymer will not be manufactured locally, there will be no environmental exposure associated with this process in Australia. Release of the polymer during transport (due to a ripped bag) is expected to be very limited. Residual notified polymer empty bags is expected to account for < 1% of total import volume and will be disposed of to secure landfill.

The drilling mud normally contains 0.5% w/w of the notified polymer. During drilling operations, the mud is pumped down the drill shaft and functions as a combination of lubricant for the drill bit, carrier for the solid cuttings, and sealant to minimise drilling fluid loss into the formations during deep well drilling. The drilling mud is pushed out of the well and transferred to the surface for solids processing. This involves a sifting along with low speed centrifugation in order to remove the drill cuttings. Drilling mud containing the notified polymer is then replenished with additional mud containing more notified polymer and is transferred back down into the well. The drill cuttings that represent about five to ten percent of the material transferred to the surface contain some trapped notified polymer and, in the case of off-shore drilling, are discharged into the ocean. In the case of on-shore drilling, these are discharged into lined reserve pits for later treatment.

After the completion of the drilling operation, the drilling mud along with the used notified polymer is discharged into the ocean or into the lined reserve pits for on-shore use. Due to the anionic nature of the polymer at the pH of the ocean, and the high molecular weight, the notified polymer is expected to be tightly adsorbed to the clay and mud residues (> 90% according to Boethling R S and Nabholz J V, 1997). Because of this adsorption to the drilling mud, the notified polymer will be distributed with the mud, which is expected to be localised around the area of drilling operation, unless strong currents prevail.

The reserve pits for on-shore drilling operations may be treated in several different ways, including, being allowed to dry by evaporation, being picked up by vacuum trucks and transferred to disposal well sites for discharge, or simply covered with top soil and remediated.

6.3.2. Environmental Fate

The notified polymer is expected to remain tightly adhered to the drilling mud, and should degrade slowly through biotic and abiotic processes. While hydrolysis is possible, it is unlikely to occur under environmental conditions.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	White powder.
Melting Point/Glass Transition Temp	325ºC (flow temperature)
Density	1440 kg/m^3 at 20ºC
Partition coefficient	Log P_{OW} < 3.0 OECD TG117 HPLC method. Test substance eluted prior to the 7 reference substances.
Water Solubility	30 gm/L (deionised water) 50 gm/L (seawater)
Dissociation Constant	Not provided. The notified polymer contains acid functionality, which will remain ionised in the environmental pH range of 4-9.
Particle Size	70 µm (> 99.9% of notified polymer), 3 µm (0.1% of notified polymer)
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
Explosive potential	Nil (based on the absence of reactive functional grops indicative of explosive potential)
Autoiginition temperature	>204ºC

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicity data were submitted.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

The following toxicological studies were submitted:

Endpoint	*Result and Conclusion*
Ready Biodegradability	Not readily biodegradable
Bioaccumulation (Chemex (2000)).	Not bioaccumulative
Fish Toxicity (*Scophtalmus maximus*)	EC50 >1800 mg/L

Amphipod Toxicity (*Corophium volutator*)	LC50 >10000 mg/L
Mysid Toxicity (*Mysidopsis bahia*)	LC50 12800 ppm
Copepod Toxicity (*Acartia tonsa*)	LC50 599 mg/L
Algal Toxicity (*Skeletonema costatum*)	EC50 2859 mg/L
Abra alba	EC50 447 mg/kg

9.1.1. Discussion of observed effects

Biodegradability

The biodegradability of the test substance was conducted as a 3-month BOD test mainly as described in OECD Guideline 310D for testing of chemicals (SINTEF (1993b)), and modified for seawater conditions as recommended by the Water Quality Institute, Copenhagen, Denmark, with the exception of the prolonged test time.

Two replicates of inoculum with test substance and a negative control without test substance were incubated in the dark at 20 ± 1ºC in 90 days. Results were recorded after 0, 15, 28, 50 and 90 days and the BOD (mg O_2/mg) were < 0.01 at all readings indicating less than 1.5% biodegradation. Although not readily degradable in natural seawater, the test substance may be degradable under environmental conditions.

After 28 days incubation period the measuring results showed unexpected results, since oxygen contents in reference solutions increased with a reduced calculated biodegradability of this compound as a result. This indicates that the results of a BOD test be unreliable after a 28-day incubation, and for long-term test other methods for measuring biodegradability should be used, e.g. the OECD 301 E shake flask method.

Due to the lack of measured biodegradability of the test substance an inhibition test was conducted to analyse if the test substance was toxic to the seawater microbes at the tested concentration. No toxicity was measured, i.e. the notified polymer is a poor carbon source for the bacteria of this seawater inoculum.

In summary, the notified polymer was found to be not readily biodegradable under the test conditions.

Fish Toxicity

The fish toxicity study on the test substance was conducted under semi-static conditions according to the OECD Guidelines for Testing of Chemicals Fish, Acute Toxicity Test reference 203 modified to marine conditions (Chemex (2002)). The marine fish Black Sea Turbot (*Scophthalmus maximus*) was used as the test species.

Based on the results of a range finding test, the definitive test concentrations of 0 (control), 320, 560, 1000 and 1800 mg/L were used. Volumes of 10 L of test solution were prepared in aquaria. A control vessel of 10 L dilution water was also prepared. Seven test fish were placed in each of the test and control vessels.

The pH value, dissolved oxygen and temperature were measured on each test and control solution immediately prior to initiating the test. The test and control solutions were replaced at 48 hours, the live animals being transferred to freshly prepared test solutions. The test parameters were measured before and after each change of test solution, and observations of mortality were made daily. The test vessels were maintained at 15 ± 1.5ºC, with a light cycle of 16 hours light and 8 hours dark.

Cumulative mortalities were calculated for each test concentration and the control. LC_{50} values were estimated and 95% confidence limits calculated using ToxCalc version 5.0 "Comprehensive Toxicity Data Analysis and Database Software".

As there were no reported mortalities under any test substance concentration, the LC_{50} was determined to be > 1800 mg/L. It was not possible to determine 95% confidence limits.

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to fish under the test conditions.

Aquatic Invertebrate Toxicity

The invertebrate toxicity study was conducted according to a draft protocol based upon ISO TC147

SC5 WG2 titled: "Water quality – Determination of acute lethal toxicity to marine copepods (Copepoda, Crustacea)" (Allforsk (1993)). The marine copepod *Acartia tonsa* was used as the test species.

The preliminary testing of the notified polymer indicated a LC_{50} between 1000 and 5000 mg/L. The definitive test determined the LC_{50} to be 599 mg/L, based on nominal test concentrations of 0 (control), 498, 1780, 2131, 2713, 3391, 4360 and 6782 mg/L. The lowering of the LC_{50} value and incidental results of each exposure concentrations might indicate that the copepods are influenced by some other factors than toxicity alone. The test substance also showed a steep dose/response relationship, making calculation of LC_{50} uncertain due to few observations between 80% and 20% mortality. The test substance produced a viscous solution which at the higher concentrations to some extent disabled diffusion of oxygen into the test solutions on average, and most likely produced local depletion of oxygen close animals respiring.

The viscosity of the test solution hampered the normal swimming behaviour of the copepods with possible exhaustion during the exposure period. The viscosity also made the interpretation of the result of the test difficult, since the test solution mechanically immobilised the copepods and made it difficult to distinguish copepods immobilised by toxic effects from copepods immobilised by the test medium. The effects of the test substance on *Acartia tonsa* as appears in this test seems to be a combined effect of mechanical stress (viscosity) and toxicity from the test substance.

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to *Acartia tonsa* under the test conditions.

Amphipod Sediment Phase Toxicity

The sediment phase study was conducted under static conditions in accordance to SOP E211 based on Paris Commission Guidelines 1994 "A sediment bioassay using an amphipod *Corophium sp*" (Chemex (1999)).

The *Corophium volutator* stock were collected from a clean intertidal shore area, and sieved from the sediment on site and transported in natural seawater. The animals were then maintained in the laboratory under static conditions, in the presence of a small amount of detrital material, until the start of the test.

Sediment from the site of collection of the test animals was used for the test. The aerobic layer (top 5 to 10 cm) of sediment was collected, sieved to 500 µm, washed, settled and stored refrigerated in the dark until the start of the test. The sediment was thoroughly homogenised and a small sample dried at 60ºC for about 24 hours to determine the dry matter weight. From this it was determined that the water content of the sediment was 19% (Test 1) and 21% (Test 2).

The behaviour of the test substance (notified polymer) was examined in sea water prior to testing. A nominal 1000 mg/L solution was prepared in dilution water, shaken vigorously and allowed to stand for four hours. A clear colourless solution was obtained, however, the sample required extended stirring to fully dissolve the notified polymer. Test concentrations were prepared by addition of specified quantities of test material along with dilution water, to sediment to obtain the required concentrations.

A preliminary study had identified the 10 day LC_{50} as being >10000 mg/kg and therefore definitive test concentrations were prepared (for both tests) as 0 (control), 1000, 1800, 3200, 5600 and 10000 mg/kg wet sediment by adding the appropriate amount of test substance to wet sediment.

Records were made of the numbers of animals observed alive and dead on the surface of the sediment. At the end of the 10 day exposure period, the water quality measurement were made, and each test sediment sieved to determine the number of animals still alive. As dead animals may decompose or be consumed, any missing animals were counted as dead. Where possible, the 10 day LC_{50} value was estimated and 95% confidence limits calculated using ToxCalc version 5.0 "Comprehensive Toxicity Data Analysis and Database Software".

Two definitive tests were performed to determine the toxicity of the test substance to *Corophium volutator*. It was noted on preparation of the sediments for the first test that at high test concentrations the test substance formed gel like masses within the test sediment. On mixing at 150 rpm for 3 hours, this gel did not disperse to give a homogeneous mix of the sample within the sediment. It was therefore not possible to ensure even distribution of the sample between the two replicate test systems. The resulting mortality data at the highest test concentration reflected this uneven distribution of the notified polymer. Because of these concerns the test was repeated for confirmation. The same observations were made during the preparation of the sediments for the second test. The resulting mortality data at the highest test concentration for this test showed a greater difference between the two replicates but with an estimated toxicity of the same order as the first test.

The 10 day LC_{50} of the test substance was estimated to be 8928 mg/kg dry sediment (Test 1) and 11796 mg/kg dry sediment (Test 2) as determined by the Maximum Likelihood-Probit method. The highest no observed effect (NOEC) was 3983 mg/kg (Test 1) and 7088 mg/kg (Test 2) as determined by Fisher's Exact test.

Despite the differences between replicates, it is considered that the results of both these studies indicate that the test substance is of comparatively low toxicity to *Corophium volutator* with a mean LC_{50} value estimated as > 10000 mg/kg dry sediment.

The water quality measurements of the test solutions were with acceptable limits. None (0%) of the twenty control *Corphium* died during either study and this represents an acceptable level of health of the test organisms maintained under test conditions and validates the test.

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to *Corophium volutator* under the test conditions.

Mysid Toxicity
The test with test species *Mysidopsis bahia* was conducted using the notified polymer in generic mud according to methods of the U.S. Environmental Protection Agency (1985) as defined in the Enseco Marblehead Aquatic Toxicology standard operating procedure 085-110 (ENSECO (1988)). The test was conducted at 20 ± 1ºC using seawater adjusted to a salinity of 20 parts per thousand (ppt). Mysids were produced and cultured in Enseco's Auquatic Toxicology Laboratory in Marblehead under test conditions. All data analysis for the test was performed using nominal concentrations of suspended particulate phase.

Exposure of mysids to the suspended particulate phase of the drilling fluid (the unfiltered fraction of the nonsettleable portion of a 1:9 mixture of drilling fluid and seawater) resulted in a 96-hour LC_{50} of 12800 ppm phase. The 95% confidence limits for this LC_{50} are 11200-14400 ppm phase. After correction for natural mortality, the 96-hour LC_{50} was 13700 ppm phase (95% confidence limits = 12100-15300 ppm phase).

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to *Mysidopsis bahia* under the test conditions.

Algal Growth Inhibition Test
The algal growth inhibition test was carried out according to ISO/DIS 10253 "Water quality – Marine algae growth inhibition test with *Skeletonema costatum* and *Phaeodactylum tricornutum*", 1991 (SINTEF (1993a)).

The test organism used was *Skeletonema costatum*. Results were calculated as median effective concentration (EC). Concentrations of notified polymer giving EC-values inhibiting algal growth rates by 10, 50 and 90% respectively were determined. EC-values were based on determinations of algal growth rates and biomass. The final test concentrations used were 178, 316, 562, 1000, 1780, 3160, 5620 and 10000 mg/L (ppm) measured as weight test substance/volume test medium.

The test substance was added by weight in triplicate to test flasks with seawater-based algal growth medium to give the planned test concentrations. Each test flask was preincubated in the dark at 20 ± 1ºC for 20 hours with shaking. Volumes of approximately 100 mL of each solution were transferred to new clean test flasks.

Each preincubated test flask was inoculated with algae from the preculture giving a final start concentration of approximately 3 x 10^3 algae/mL test medium. Test flasks were incuabated for 72 hours at 20 ± 1ºC under continuous light and moderate shaking. 6 flasks of test medium without test substance were inoculated with algae from the preculture, giving start concentration as in the test flasks. The mean growth rate of the control cultures was 1.724 d^{-1}. This is within the recommended range of growth rates of 1.5-2.1 d^{-1} for the algae *Skeletonema costatum*.

Algal concentrations were indirectly measured daily as *in vivo* chlorophyll fluorescence in a fluorometer. Data were treated by statistical estimation of effective concentration (EC-values) by the program TOXEDO. The test results were both calculated as growth rate (d^{-1}) or as biomass (area under the growth curve or biomass integral). The test results, concentration of test substance giving a medium effective concentration of test substance inhibiting algal growth rates by 50% (EC_{50}) was 2850 mg/L with a 95% confidence interval of 2800-2890 mg/L. The test results, concentration of test substance giving a median effective concentration of test substance inhibiting algal biomass production by 50% (EC_{50}) was 2530 mg/L with a 95% confidence interval of 2090-3330 mg/L.

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to *Skeletonema costatum* under the test conditions.

Abra Test
A faecal pellet production test using the test organism *Abra alba* (a bivalve mollusc) was performed comparing the test substance with the reference substance of 3,5-dichlorophenol. The test was carried out according to test protocol approved by SFT and PARCOM (Bioconsult A/S (1993)). The concentrations of the test substance were 100, 200, 500, 1000 and 3000 mg/kg measured as weight test substance/weight total test medium. The EC_{50} (96-12 hours) was determined to be 447 mg/kg ± 103 (SE). As the reference substance caused a faecal pellet production rate of 32% of control after 96-120 hours of exposure, which was within the acceptable range of 25 – 45%, the test was considered valid.

In summary, and in accordance with the classification scheme proposed by Mensink (1995), the notified polymer was found to be only very slightly toxic to *Abra alba* under the test conditions.

9.2. Environmental Hazard Assessment

According to the above ecotoxicological test results the notified polymer is very slightly toxic to marine invertebrates, which may be in part due to physical effects caused by the viscosity of the test substance at high test concentrations. The test substance also shows some toxicity to marine algae and *Abra alba* below the maximum tested levels, but was practically non-toxic to other marine organisms. While the notified polymer is not readily biodegradable, it has a relatively low potential for bioaccumulation in exposed organisms based on its high water solubility.

10. RISK ASSESSMENT

10.1. Environment

Less than 150 kg (based on the maximum import volume) of the notified polymer is expected to be left as residue in empty import bags, which will be disposed of to landfill. The main environmental exposure is expected to result from the notified polymer remaining in cuttings discharged overboard at off-shore drilling rigs. Effectively all notified polymer used on off-shore drilling operations is expected to be discharged to the ocean at the completion of drilling. Effectively all notified polymer used in on-shore drilling operations is expected to be contained and treated by either being allowed to dry by evaporation, being picked up by vacuum trucks and transferred to disposal well sites for discharge, or simply covered with top soil and remediated.

Currently, only 5 off-shore and 5 on-shore drilling rigs per year are expected to use the notified polymer, which could eventually release up to 30 tonne of the notified polymer per year. When used in an off-shore situation, the solid cuttings containing the notified polymer are likely to form piles on the sea floor under the drilling platform. During the operational life of the platform, the discharged cuttings may remain in a mound directly under the platform, relatively shielded by the platform itself from the dispersive effects of marine storms and currents. However, this protection can be expected to be removed once the platform is decommissioned allowing the mounds of cuttings and the notified polymer to disperse in a much wider area of the sea floor.

Most of the polymer that is discharged at the end of the drilling operation is expected to become associated with benthic sediments. The notified polymer is not readily biodegradable. Further, degradation due to abiotic and biotic processes can be expected to be very slow considering the conditions in the piles of drill cuttings, including low temperatures and low density of bacteria.

The drill cuttings may contain up to 0.5% of the new polymer (i.e. 500 mg/kg). The amphipod toxicity test result of LC_{50} > 10000 mg/kg dry weight of sediment indicates that the notified polymer will not pose a hazard to benthic organisms at the level it is present in the piles of cuttings. However, the concentration of the notified polymer in the immediate area around the platform can be expected to increase over time. It should be also noted that the physical chemical and biological processes that occur in these cutting deposits are not well understood.

Considering the large quantities of the notified polymer that will be discarded on to the sea floor and the uncertainties regarding the environmental consequences, it is appropriate that the report should be drawn to the attention of the relevant state and territory authorities.

Based on the relatively low toxicity and the suggested use patterns, the notified polymer is not expected to pose an unacceptable risk upon the environment.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

10.3. Public Health

As there will be no exposure of the public to the notified polymer the risk to the public from exposure to the notified polymer is considered low.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.

    – Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- A copy of the MSDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

All sites and processes in which the notified polymer is used must comply with the State and Territory requirements.

Disposal

- The notified polymer should be disposed of to secure landfill.

Emergency procedures

- Spills/release of the notified polymer should be handled by physical containment and disposal to secure landfill. Airborne dust and scattering should be reduced by moistening with water.

13.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under subsection 64(1) of the Act; if
    – the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

(2) Under subsection 64(2) of the Act:
    - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

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