GOED Technical Committee - Minutes

Date: October 3, 2024

PRESENT (please let us know if you were present, but not listed below)

Jenna Ritter (*chair* – Nature's Way of Canada)
Gerard Bannenberg (GOED)
Tony Bimbo (International Fisheries)
Tim Johanek (Carlson Laboratories)
Katrina Bartley (Nutrasource Diagnostics/SGS)
Bryan Talus (Scoular)
Hyun-Ah Kim (Nutrasource/SGS)
Yutong Wang (Nutrasource/SGS)
Anthony Bible (Wiley Companies)
Agata Szygula (TASA)
Christine Bousses (Fermentalg)
Frank Möllering (NutriSwiss)
Lina Cekaite (Aker Biomarine)
Andrew Jenkins (Lipid Analytical Labs)
Bradley DaDalt (Jamieson Laboratories)
Arnar Halldórsson (Lysi)
William Yip (Aker Biomarine)
Lilian Thiaux (Olvea)
Rafa Gracia (Solutex)
Gerhard Kohn (Vesteraalens)
Craig Mallon (dsm-firmenich)
Roberto Fronzoni (KD Pharma)
Tina Vestland (Golden Omega)
Dimitri Sclabos (Tharos)
Ingjerd Lystad (Pharma Marine)
Marita Buarø (GC Rieber/Vivomega)
Fernando Miranda del Solar (Austral Group)
Mohamed Koroma (Pharmavite)
Mina Fakhary (Pharmavite)
Mike Roberts (HuveNutra)
Meagan Eggebeen (Amway)
Helen Albans (Croda)
Haraldur Sigurjónsson (Lysi)
Sonia Casanova (Copeinca)
Stig Jansson (Grøntvedt)
Roberto Valenzuela (Innocon)
Linda Ren (Thai Union)
Linda Saga (Eqology)
Chloé Lhomme (Fermentalg)
Sunil Choudhary (Omega Natural Science)
Magdalena Sobieska-Pietrzak (GC Rieber)
Ivana Kostic (Colpex)
Gladys Ccahuantico (Copeinca)
Kanming Ma (Eurofins)
(Milly?)

GOED Staff:
Gerard Bannenberg (GOED)
Gaby Cortez (GOED)
Harry Rice (GOED)

Guests:

Absented:
Claus-Michael Brieber (Henry Lamotte Oils)
Chris Gearheart (GOED)
Heike Meyer (Imperial Oel)
Christine Krumbholz (KD Pharma)
Ellen Schutt (GOED)
Johannes Kraft (Evonik)
Simone Staiger (Eurofins)
Viorel Marculescu (MBP Solutions)
Geir Frode Olsen (Epax Norway/Pelagia)
Jorge Sepúlveda (Innocon)

Invitees for this call:

Charlotte Jacobsen (National Food Institute, Lyngby, Denmark)

Approval of Agenda and Minutes (Jenna Ritter - committee chair)

- Any comments on the minutes of the last meeting?
  - *No comments.* The minutes of the last meeting were approved.
- The agenda and meeting documentation were sent out on Oct 1st, 2024. Any additions or changes?
  - The agenda was approved.

New Technical Committee Members (Jenna Ritter)

- **New members of the Technical Committee**
  - **Bryan Talus (Scoular) –** Good to be here. I am a food safety quality regulatory manager at Scoular Company. I have been with Scoular for almost two years now. I support a division that trades and has manufacturing facilities for pet and animal food ingredients. One of the ingredients is fish oil. Fei (Cheng) was previously a member here but she no longer supports the group that is doing fish oil, so I have swapped in for her. I am based out of Minneapolis in the US.
  - **Katrina Bartley (Nutrasource Diagnostics/SGS)** – Hi everyone, I am with SGS/Nutrasource in Guelph. I work in product certification. We do a lot with fish oils. I am interested in learning a little bit more.
  - **Guowen Yang (KinOmega) –** *not present*
  - **William Yip (Aker Biomarine)** – *having technical issues (message in the chat)*

- **Members who have left the committee:**
  - **Fei Cheng (Scoular) –** Thanks for Fei's contributions to the committee. Bryan Talus is taking her place.

Monograph/Pharmacopeia Updates (Gerard Bannenberg - GOED)

- **Organoarsenic testing (Gerard)**
  - **Gerard (GOED) –** A few months ago we discussed EFSA's Scientific Opinion called "Risk assessment of small organoarsenic species in food" , which was published on June 4, 2024 (link). The report deals with the exposure and health risks through food consumption of two

small organoarsenic (pentavalent) compounds monomethylarsonic acid MMA(V) and dimethylarsinic acid DMA(V). These arsenic compounds are found mainly in sea fish, mussels, crustaceans, macroalgae, and brown rice. DMA appears to be the more widespread contaminant. Rice and fish are the main contributors to human exposure to MMA(V) and DMA(V) in the diet. The highest (chronic) exposure to DMA(V) was found in the age group of young children. In the next few years, studies on the larger organo-arsenic compounds (arsenoglucosides, arsenolipids) are to follow. As a result of this interest by EFSA (signaling potential future regulations) and the likelihood that such contaminants may be present in fish oils/omega-3 oils, it is of interest by GOED members to measure the levels of these compounds in their oil ingredients and products at some point. We set out to map which commercial laboratories can test these compounds in oils. The following information has been obtained so far.

Eurofins: Currently offers analysis of organoarsenic species in "vegetarian" matrices (e.g. rice), but not in fish and fish oils yet. MMA can't be separated in marine matrices yet. The plan is to offer As (III), As (VI) and DMA, possibly starting October 2024.

Other potential laboratories may be ALS (link) / Tentamus (link) / Agrolab, Kiel, Germany / Merieux Nutrisciences North America / Mylnefield, UK / NutriControl, Netherlands / Sintef, Norway. I will explore what testing abilities they have for organoarsenic species. If anyone has further information, please let us know. We will report back on this topic to the committee as soon as possible.

- **Craig Mallon (dsm-firmenich)** – Was there any mention of any concentrations of concern?
- **Gerard** – No. We could look at the exposure in the Scientific Opinion. But I haven't seen anything about levels in oils.
- **Craig** – I ask because for those of us who are determining total arsenic to a certain quantification level, if that is enough of an indirect way to verify that these substances are not present.
- **Gerard** – One can measure total arsenic and inorganic arsenic, and the difference should be the organic arsenic component. But the direct measurement of the individual organoarsenic species is still relatively new for most of us.

- **Action item** – Reach out to laboratories to assess ability to measure organoarsenic species in edible oils (**Gerard**)

- **EFSA Technical Report on reevaluation of hexane as an extraction solvent in the food industry (Gerard)**

- **Gerard –** EFSA recently published a report called "*Technical Report on the need for re-evaluation of the safety of hexane used as an extraction solvent in the production of foodstuffs and food ingredients*" (link). It was just published last week and provides a quite interesting background on the composition of technical hexane and its uses in the food industry. The safety of hexane was last evaluated in the 1990's and EFSA considers that it is time for an update. The report provides information on the composition of technical hexane, as well as on contaminants that can be present, such as polycyclic aromatic hydrocarbons. There is also a paragraph about MOAH contamination of hexane, which may be of relevance to consider when you use hexane for example to rinse glassware or sample containers. While hexane is not widely used today in the omega-3 industry for extraction of oils, possibly some suppliers of ingredients do.

Legislative Updates (Gerard Bannenberg)

- *No updates*

All Other Business (Jenna Ritter)

- **Reminder on MOH Resources webpage (Gerard)**
  - **Gerard –** A quick reminder - in August we created a webpage (link) on the member section of the GOED website with all of our information on mineral oil hydrocarbons (MOH). You can read something in the current about it here – link. We are continuously receiving questions from members about MOH, so feel free to forward this to your colleagues internally.

- **Webinar on MOH analysis by GCxGC-ToF-MS (Gerard)**
  - **Gerard –** A free webinar by Eurofins will be held on October 10th (10 - 11:15 a.m. CEST), with the title "*New opportunities for source identification and assessment of toxicity of mineral oil contaminations*". It explains the new confirmatory analysis of MOSH and MOAH by GCxGC -ToF-MS, which can provide a couple of advantages when used as a qualitative confirmation of LC-GC-FID analysis, e.g. the potential identification of the source of the mineral oil contamination as well as the identification of the number of aromatic rings as a basis for the toxicological assessment. This webinar we provide a short introduction into mineral oil background and analysis, the current regulatory status in the EU, why GCxGC-ToF-MS is needed for mineral oil characterization for source identification and

toxicological assessment, and some examples for opportunities and limitations of GCxGC-ToF-MS. You can register here – link.

- **Updated lubricants table (Gerard)**

  - **Gerard –** A recent update was made to the table (link) with lubricants data of GOED members, now with information from thirteen members. We may now also soon provide a link to this table on our MOH Resource page. There is not yet all that much information about the MOH composition of the lubricants, but it can give good information about which lubricants are used in the omega-3 industry for which purposes, and information about suppliers.
    If you like to add information (anonymized) about your operations, please reach out to us, and we will include that in the table.

- **MOSH/MOAH in crude unrefined anchovy oil and relation to biomass fat level**

  - **Gerard –** A few meetings ago, we looked at the relationship between the amount of fat in the anchovy biomass and the MOSH and MOASH levels in the crude unrefined anchovy oil made from that biomass. At the time we observed an interesting relation that as the fat levels dropped over the two fishing seasons of 2023 (along with a significant reduction in total biomass harvested in 2023), the MOSH and MOAH levels rose. Such a relation would possibly predict that as fat levels in anchoveta would return to normal at some point, MOH levels would also decrease in level again. MOH being a highly fat-soluble contaminant, would basically distribute in the available volume of oil, and the amount of oil obtained from anchovy determining the concentrations of MOSH and MOAH. Since we now have data for the first fishing season of 2024 (T1-2024), we were able to determine this relationship further in time. (*Copies of the graphs shown on screen have been uploaded on the technical committee folder and can be viewed here* – link. *Note, please don't distribute*).
    You can see that as the abundance of anchovy fish harvested has bounced back this year, also the fat levels have increased, back to about 3,5%, from levels around 0,5 % in T2-2023. This data from Peruvian producer "A", for which we looked at data earlier this year. If we now look at MOSH levels, these have come back now, from very high levels last year, to levels that were typical for 2020 and 2021. This supports the idea that MOSH levels in crude unrefined anchovy oil inversely follow the fat level in anchovy, i.e. the available amount of oil that can be extracted from the fish. The graph where MOSH level is multiplied with the fat level more or less indicates that the total "MOSH load" is stable over time, although it is not a perfect relationship.
    For MOAH this association is less clear. The MOAH levels in the crude anchovy oil from T1-2024 of this producer are still at the same level as in 2023, and the total load seems to

have increased. This may suggest that additional contamination could have occurred, or that the background interference is more pronounced this last fishing season.
To get a better picture, data from a second Peruvian anchovy oil producer (going back to 2018) were combined with those from producer A. You can see in the additional graphs that the data support that fat levels have gradually gone down since 2020-T1 but have now returned to normal in this year's fishing season to an average level of about 5%. Accordingly, MOSH levels have decreased robustly compared to last year (with an average about 25 mg/kg), and the total load matches that of previous years and perhaps even indicating that the total MOSH load may be lower than previous years.
For MOAH, again the relationship is again a little harder to discern, perhaps because the values are lower, and we all know that there are still some issues with laboratory intra-lab variability. But it can also be appreciated that a much tighter distribution of lower MOAH levels is seen for the anchovy oils produced from the first fishing season this year, and the average value of the total MOAH load is comparable to that of previous years.
In summary, with the data available so far it seems that MOH, especially MOSH, behave as typical fat-soluble contaminants that largely distribute in the available oil volume that can be obtained from Peruvian anchovy. This is nicely seen for MOSH, and less clearly for MOAH. Knowing the fish fat level might assist in predicting MOSH and MOAH levels in crude fish oil. Future evaluations will refine or refute this idea. The tool can also help in evaluating the total MOSH and MOAH load, which can be helpful for MOH mitigation. Further understanding of what substances contribute to the MOSH and MOAH signals will also be needed to really understand if we are looking at contamination or at natural interferences here, or a combination of both.

- **MOAH occurrence data update**
    - **Gerard –** I now like to provide the committee with an update of the occurrence data for MOH that we have collected over the past several years, going back to 2018. I will focus on MOAH here, and we can have a look at MOSH on another occasion. (*Copies of the graphs shown on screen have been uploaded on the technical committee folder and can be viewed here* – link. *Note, please don't distribute*). Note that the summary results of this sectorial overview may not match those of your individual enterprise. And if you have not recently submitted data to GOED, please do so that our overall data summaries improve.
    The first graphs here show box plots I have for all batches for all years – so all species, crude and refined from all years (n=874). While the left-hand graph also shows the few batches with extremely high levels, the right-hand graph is a zoom-in of the left graph. The number of datapoints is shown alongside, showing that we have data for 527 batches in the year 2022, and 104 so far for this year, while having only a few data points for the first years. You can see that for the last three years, 2022-2024, 75% of the data is below about 8 mg/kg MOAH, 95% of the values below about 18 mg/kg, and the median ranging between 2,5 and 5 mg/kg. Let's focus on different types of oils now.

When comparing crude unrefined anchovy oils with refined anchovy oils, you can observe the overall lower value distributions for the refined oils. In 2024 so far, the median for crude oils is about 7,5 mg/kg, while for the refined oils it is about 1 mg/kg. About 95% of crude oils have MOAH levels below 12 mg/kg, with 95% of refined oils below 6 mg/kg. Ideally, we receive more data for refined anchovy oils, as the number of data points is a little low and we would like to confirm this for this important commodity. Overall, the data suggests that refining of crude unrefined anchovy oils takes MOAH levels into the range that is desirable, namely under 10 mg/kg, and for a large percentage of these, but not all, below 2 mg/kg.

For refined cod liver oils, the number of batches for which I have data is modest (n=42 for the past 4 years), but the data suggest that MOAH levels are below the limits of quantification (LOQ) of 1 or 2 mg/kg, or for 2022 all the values are below 10 mg/kg with 70% of the data below 4 mg/kg. If anyone has additional data for cod liver oils, please send me.

For refined tuna oils, the distribution varies quite a bit by year, probably because there is data from a limited number of producers only. In 2024 and in 2022, the median MOAH level is about 5 to 7 mg/kg, and 95% of the data below 13 to 19 mg/kg. Other years, like 2020, 2021 and 2023, indicate much lower MOAH levels that are always below 6 mg/kg, and median levels between zero and 2 mg/kg. the data suggest there is room for improvement for tuna liver oils, in contamination mitigation and/or refining, and understanding natural interferences.

For refined sardine oils, primarily from Morocco, MOAH levels in 2022 were below 14 mg/kg with a median of 6 mg/kg, while data from 2021 indicated much lower levels. More data is needed for this category.

For microalgal oils, the levels of the large majority of batches are below 2 mg/kg, with only a few batches giving elevated levels.

- **Craig** – For those occurrences in 2022 with very high levels, could we check if those were encapsulated products?
- **Gerard** – I need to look that up (*Note added to the minutes*; the elevated values correspond to two *Nannochloropsis* oils, with the producer indicating that the method is not considered suitable for this oil type and further batches after 2022 not having been tested, and one ethyl ester concentrate made from a high-DHA microalgal oil, likely from *Schizochytrium*).
- **Chloé Lhomme (Fermentalg)** – In general, are the data for standard oil or for mixed or formulated oils?
- **Gerard** – What do you mean with “standard” oil?
- **Chloé** – I mean pure oils, from one species, not blends of oils from multiple species.

- **Gerard** – Except for the first graphs with all the occurrence data together, the graphs for the individual oil types are for the pure named oils, not blends or formulations. For anchovy oils though, the data are often submitted for "oil from anchovy and sardine", or oil from "anchovy, sardine and mackerel", since anchovy is often caught together with other fish species and the crude oil not made from only anchovy fish. In that case, the data are grouped together under anchovy. For microalgal oils, here I did group oils from both *Schizochytrium* and *Nannochloropsis* together.

  Lastly, I like to show you the summary graph for concentrates, which encompasses EPA- and DHA-rich oils that be both ethyl esters and re-esterified triglycerides. You can see that in the last two years, 2023 and 2024, the distribution of MOAH levels is always below about 7 mg/kg. This year in fact, the median is below 2 mg/kg. It looks like an improvement from prior years, where the distribution in levels was much wider, with plenty of batches with elevated MOAH values, although also the median values were always below 4 mg/kg. It would be good to keep receiving new data to see if the quality indeed keeps staying good.

  Please keep submitting data, especially if you have never done so, or when you receive new testing results. I can also prepare an overview about MOSH, if that would be of interest to this committee.

- **Arnar Halldórsson (Lysi)** – Has it been cleared if the new draft limits of 10 mg/kg will apply to crude oil, refined oil, or both?
- **Gerard** – Currently the proposal is written as "...for products as sold", which means for finished products sold to consumers. We understand that that refers to refined oils as part of finished products, such as dietary supplements. But then the European Commission says that the regulation would also apply to all upstream FBOs (Food Business Operators), which means to all producers of ingredients for that consumer product. That is a way of getting crude oil producers, in our case, to already start meeting the final limits. In practice, it is not clear how that will play out, for example it is not so likely that European food authorities will test the quality of crude unrefined omega-3 oils also. Right now, I have no further information on how the proposal is progressing.
- **Lilian Thiaux (Olvea)** – I confirm that it is unclear. I heard that it is uncertain but maybe it won't be applicable to crude oils. But it is not confirmed. New meetings are being organized to discuss the topic soon. There is a lot of lobbying to make it unapplicable to crude oils. Not confirmed yet.
- **Gerard** – Thanks. Anybody who is interested in hearing more about MOSH and MOAH levels in individual oil types, reach out to me after the call. Just treat the data a bit securely and don't disseminate widely. I also have small sets of data for other oil types not shown today, like for example salmon or pollock oil.

- **Technical publications notification**
    - **Gerard –** Together with the agenda, you received our summary of recent publications on technical matters related to omega-3. As usual there are plenty of publications on advanced formulations of omega-3 oils and production of microalgal omega-3 oils. Have a look if there is anything of special interest for you in the list. A publication by Geueke *et al* (link) I thought was particularly interesting, identifying hundreds of chemical substances derived from food packaging materials and then assessing which ones are also found in the human body.

- **AOCS GOED Nutraceutical Oils Laboratory Proficiency Program**
    - **Arnar Halldórsson (Lysi) –** There has been a change in the AOCS team managing the AOCS Laboratory Proficiency Program (LPP) project. They want to make the rules stricter on missing cons. There are missing cons occasionally in our GOED Nutraceutical Oils LPP**.** Generally, using the recommended methods, we are not quantifying all the individual omega-3 fatty acids. Normally according to the methods we use, we quantify EPA, DHA and Total Omega-3. But in our LPP there is a mandatory reporting requirement in mg/g for seven individual omega-3 LCPUFA species. So maybe this is a question for you, Tony (*Bimbo*), if it possible to make those parameters optional instead of mandatory, because I think according to the European Pharmacopoeia and the GOED method, we only need to quantify EPA, DHA and Total Omega-3, not the quantification of all individual omega-3 fatty acids.
    - **Tony Bimbo (International Fisheries) –** You are talking about the GOED series, right?
    - **Arnar –** Yes
    - **Tony –** I thought all the omega-3 fatty acids were being quantified and entered into the proficiency calculation?
    - **Arnar –** Yes, they are, but many labs don't quantify all the individual omega-3 fatty acids, only EPA, DHA and Total Omega-3, as the methods are designed for. Normally the label claims are for EPA, DHA and Total Omega-3, not individual other omega-3 fatty acids.
    - **Jenna –** Arnar, are you saying that you want to leave EPA, DHA and Total Omega-3, but for the Total Omega-3 you don't want them to include what went in to Total Omega-3, just the final calculation? Just the final result?
    - **Arnar –** It is fine to have the mandatory reporting of EPA, DHA and Total Omega-3, but there are other omega-3 fatty acids that are normally not analyzed and quantified (*in order to determine Total Omega-3*). They are just simply expressed as Total Omega-3. This has not been an issue before, but the new team at AOCS thinks this all mandatory and they are very strict now. But this is now a missing con, and still you are an approved chemist. If we can get a message to them that these are not mandatory, and we propose early to them some optional parameters, right? These should be optional, for if labs want to compare these, but the set

parameters, the approved chemist criteria and the ranking should be based on EPA, DHA and Total Omega-3, not the other omega-3 fatty acids. In the industry the other omega-3 fatty acids are not quantified with a standard quantification and are not used on label claims and certificates of analysis.

- **Tony –** I have to go back and talk to them. I thought that from the reports that each of the individual omega-3 fatty acids, the seven of them, are all being quantified and are being calculated into the proficiency.
- **Arnar –** That is on the spreadsheet. I can give you a call, Tony, and explain to you what is happening. These are mandatory cons but if you do calculations based on fatty acid profiling, when you determine Total Omega-3 you don't quantify each individual omega-3 fatty acid – you only quantify EPA, DHA, and Total Omega-3 in one calculation.
- **Craig –** I agree. What some labs might be doing if they only routinely having to quantify EPA and DHA, they may just be taking the peak areas of the other omega-3s, and not running specific pure calibration standards for the others. They may be sort of taking an approximate response factor for the other omega-3 fatty acids, when not routinely quantifying them.
- **Keith Persons (Eurofins) –** That is what the GOED method and the other methods (*PhEur 2.4.29, AOCS Ce1i-07, USP 401*) tell you to do for the other omega-3s. So, I agree, strictly speaking the monograph methods are only telling you to calculate EPA, DHA and Total Omega-3. So strictly speaking, following those monographs, for the GOED proficiency series that we should move the other individual omega-3 to optional reports. I think a real lab should be able to do it, but apparently it is an issue. So strictly speaking, these should be optional to the program.
- **Gerard –** We will write up a proposal. It may not be feasible to have that going into effect already this year.
- **Tony** – Yes, we can't make any changes now because the first set of samples is out. So, any changes will have to be in the 2025-2026 year.
- **Arnar** – This has nothing to do with the samples and the analysis. It is only for the calculations in the end, for the AOCS part. So that these additional omega-3 fatty acids become optional reporting and are not mandatory.
- **Tony** – What I am saying is that we can't make any changes to the protocol because people have already done whatever analysis they have got to do. And some have already reported and can't go back.
- **Arnar** – What I am saying is that there is no change to the protocol. Everybody follows the same procedure as they have done before, it is just how AOCS handles the results.
- **Jenna** – Just the backend of the results page.
- **Arnar** – People just post the cons just like they have done before. It is just like the ones not reporting the other omegas in mg/g, they are still going to be ranked in the GOED Nutraceutical Oils LPP and not having failed on missing cons. Because reporting on the other omega-3 is not mandatory for the GOED method or the other recommended methods.

- **Gerard** – We will make a proposal and discuss this on the next call.

- **Action item** – Make a proposal for improvements to the AOCS GOED Nutraceutical Oils LPP, including reporting of additional omega-3 fatty acids as optional parameters since recommended methods don't require these to be quantified, and discuss in the next call (**Gerard Bannenberg, Arnar Halldórsson, Tony Bimbo**)

Presentation: ***"Novel Sources of Omega-3s"*** **- Prof. Charlotte Jacobsen** (Head of Research Group for Bioactives – Analysis and Application, National Food Institute, Lyngby, Denmark)

A copy of the presentation will be shared with the committee after the meeting.

Q&A

- **Gerard** – Are the invasive goby fish and starfish locally present in Denmark.
- **Charlotte** – Yes. The omega-3 oil used for supplements in Denmark, most of it is coming from Chile and Peru. We don't have any great production of fish oils for dietary supplements in Denmark. If we have a source available locally, why not use it for omega-3 production?
- **Gerard** – is it challenging to catch these species?
- **Charlotte** – No, although for the goby there is no commercial fishery today. I think what we need to look into now is into how companies treat the material after the catch, as until now it is mainly used for feed production. To make sure that the quality of the oil is sufficiently high. This is something we have looked into during the project, and there is still some work to do.
  I will just add that we likely need a novel food approval if we want to make these oils for food consumption, since they have not been used for that purpose before. Part of the project is to find out what documentation we need to submit a novel food application.

End of meeting.

Summary of Action Items

- **Action item** – Reach out to laboratories to assess ability to measure organoarsenic species in oils (**Gerard**)

- **Action item** – Make a proposal for improvements to the AOCS GOED Nutraceutical Oils LPP, including reporting of additional omega-3 fatty acids as optional parameters since recommended methods don't require these to be quantified, and discuss in the next call (**Gerard Bannenberg, Arnar Halldórsson, Tony Bimbo**)

Date of next meeting

- The next Technical Committee meeting will be tentatively scheduled for Thursday, November 14th, 2024

USEFUL LINKS:

- Useful documents that the committee has discussed can be found in the Technical Committee folder. You can upload any material there yourself as well: https://drive.google.com/drive/folders/0B-5CurmVIvvETm1Wd29xemU5YVU

- Past minutes can be found here:
  2024 - https://drive.google.com/drive/folders/16WcCbtwh_NY09cnx-pEpnANbubBv7Wmo?usp=drive_link
  2023 - https://drive.google.com/drive/folders/1Q_aJTzxZL106KkZJUkgrkLT2MdgDiEXh?usp=share_link
  2022 - https://drive.google.com/drive/folders/1Pt8CJafBCjIYaLZF0ZJ08csPqlzW5XaC?usp=sharing
  2021 - https://drive.google.com/drive/folders/1VGy-t4TuWtDUB30jU98unIxWYzpnZuNj?usp=sharing
  2020 - https://drive.google.com/open?id=1olF0Ab9UeGO_VaQpSshICS3xn0V8IiLK
  2019 - https://drive.google.com/drive/folders/0B0usR2nagMSpSU1aaTR6Ty0yTE0
  2018 - https://drive.google.com/open?id=1lXXmBgN3F9XwZnXKxqq0hwC-oLZl9rc_
  2017 - https://drive.google.com/drive/folders/0B6uJWj5y9FY9NDRRS2lVdUQ1ZWs
  2016 - https://drive.google.com/drive/folders/0B6uJWj5y9FY9UVZpU3NLejBIMEk

- GOED Presentations - GOED Presentations (goedomega3.com)

- GOED Newsletters: If you do not receive newsletters from GOED, please sign up since this is our best way of communicating with members. Here is the link: http://eepurl.com/F-p5