

Bitumen 101



May, 2013 -- Brian Keelan

For a long time now I have been expressing my concerns about the decline of The Chemical Valley in Sarnia. Why it has happened no longer really matters although there are definitely some lessons to be learned. My biggest concern is what are we doing about it. And by 'we' I do not mean me. I'm just an old audio/video dealer who knows nothing about how the Chemical Valley works. I only know that when it is working, business is good everywhere else.

My old high school friend Mac Kechnie and I were talking about these very issues one day last winter and he arranged for me to have a coffee with Walter Petryschuk, a retired Polysar site manager, industry analyst and passionate promoter of the opportunities for our city and our country in the crude oil 'value-added' business.

Walter told me about the basic concept of adding value to bitumen here in Canada instead of shipping bitumen to foreign markets and letting them do it. Not wanting to sound like a guy who had no idea what Walter was talking about I nodded my head and made a point of finding out what bitumen was but everybody I asked outside the industry had no real idea. Bitumen was a word I'd heard over the years but if I tripped over a piece of bitumen or stepped in a pile of it, I'd have no idea what it was or what could be done with it.

In comes Dictionary.com. Bitumen: "any of various natural substances such as asphalt, maltha or gilsonite, consisting mainly of hydrocarbons." (Hydrocarbons are compounds containing only hydrogen and carbon and the list of possible combinations is a long one.)

So back to the original question... what is bitumen? Next I Googled bitumen, then touched 'images' to see what the stuff looks like and then touched 'WEB' for descriptions about what it is. According to Wikipedia: Bitumen is a category of organically based liquids that are highly viscous, black and sticky.

According to The Canadian Encyclopedia; Bitumen is the heaviest, thickest form of petroleum. (Now we're getting somewhere.) In its natural state, bitumen is only suitable for paving roads (it's also known as asphalt). In the old days before we had roads, it was used by natives to waterproof their canoes.

Unlike conventional crude oil, bitumen does not flow freely in a pipeline. It is heavier than water, thicker than molasses and in Alberta, some of it can be reached by drilling wells but the rest of it lies on the surface, mixed with a lot of sand. Oil sands and tar sands are technically, bituminous sands. When we extract bitumen from the sand, 2 tons (4,000 pounds) will yield 250 pounds of bitumen – which fills one 45 gallon barrel. The rest of the stuff (mainly spent sand) is taken back to the open-pit

they took it from.

Back in 1964, an Esso engineer at the Sarnia refinery named Clem Bowman was assigned to work on the process of separating the oil from the bitumen. The process is known as upgrading. Bitumen is either upgraded to synthetic crude at an upgrader site near the tar sands or it is mixed with a diluent on a 70% bitumen/30% diluent ratio and put in a pipeline and piped to a site where it is upgraded to synthetic crude oil. The synthetic crude oil is then piped to a refinery where it is refined to products like gasoline, diesel fuel, jet fuel and other petrochemicals that are used to make all kinds of stuff.

When the project got up and running in the 70's, 100% of the bitumen was upgraded and then refined right here in Canada. Now most of the bitumen is shipped out of Canada and upgraded and refined elsewhere and that's where the "Adding Value to Bitumen" thing comes from.

This week I managed to talk my way into a conference held here in Sarnia called: Bitumen – Adding Value: Canada's National Opportunity. The conference was put together by Walter Petryshcuk and Clem Bowman, now a world-renowned Order of Canada oil sands scientist who has recently moved back to Sarnia for the fourth time and at age 83 continues his work at the UWO site here. Sarnia is very lucky to have these two guys on our side still working to try and promote and build a future for our city and our country.

Walter and Clem point out that Canada is leaving a lot of money and good-paying jobs on the table by just sending the bitumen to other markets where the jobs involved in upgrading and refining the bitumen are eagerly waiting. We are missing out on a national opportunity by just selling the raw product and then letting other countries have those valuable jobs.

It makes me think of what my dear mother used to love telling me, "Don't be a schmuck dear."

At the Adding Value to Bitumen conference held right here in Sarnia on May 21 and 22, people from all over were there. Our local guys who build and service the facilities (upgraders and refineries) required to do the work, government people to tell us what opportunities they see and what they can do, labor people to show us that they are ready to make this happen, Alberta people to tell us what they need from us and oil industry people to tell us about the opportunities that exist for us here in our local market and the national market.

Alberta's basic problem is that they are extracting bitumen from the Tar Sands faster than they can ship it and they need help to solve that problem since their own labour force is not big enough to do it all and is also untrained in all the aspects. They need upgrading equipment out there so they can get more product into the pipelines and they need more pipelines to be able to ship bitumen and synthetic crude to markets that can use it today.

The opportunities exist on two fronts. We can build and service refineries, upgraders and pipeline products here in Sarnia for this area and we can also build the upgraders and refinery modules and ship them to other areas in Canada and the rest of the world – once we get them loaded onto a ship – which I wrote about a few months ago.

Then we need to go out there and install and service them.

We also need to stop thinking about shipping oil products on a north/south only grid and get thinking about it on an East-West basis. With an oil pipeline to the East we could stop the import of oil from Venezuela, Saudi Arabia and the rest. We need to get our own oil out to the east and the west so that we are able to take advantage of the best price situations. Our market to the south (USA) could dry up or at least shrink as the US does what is best for the US and knowing that... Canada must also do what is best for Canada.

To do that we will need a plan, a national plan: one that works in the short term but has good solid,

long-term thinking.

The pipeline issue is a little bit thorny. When you ship diluted bitumen (dilbit) you need to extract the diluant (thinner) at the other end and ship it back so that it can be mixed with more bitumen and re-piped. That requires a two way pipeline, (dilbit out and diluant back). The green Party and other environmental groups have expressed valid concerns since the diluent is composed of various levels of benzyne which is a dangerous chemical if it gets out of control; like say through a pipeline leak as it did in Kalamazoo Michigan and they are concerned that benzyne corrodes pipelines from the inside. Enbridge on the other hand says that factor is not a valid concern. We need to know the truth about that. I just found out that bitumen is not considered to be oil so that pipeline companies that ship bitumen that way don't pay into the fund that does the cleanup and those type of stupid rules need to be changed faster than a politician's pay-raise is voted in.

That's just my opinion and since I have only just learned what bitumen really is, it's not much to go on but I think we are very fortunate to have the people we have here in Sarnia who cared enough about our city to get involved and spearhead a worthwhile project like this. I won't name all the people from Sarnia who were there because it would take too long and I don't want to single out anybody in particular since this is truly a collaborative, worthwhile effort with our industry, workforce and political people eagerly participating and contributing but, I do want to recognize and thank Walter Petryschuk and Clem Bowman for having the gumption to get this effort off the ground.

And now that we all know what Bitumen is and the important role it could play in our future, I think we should all try to learn more about what is going on in this industry and show the world that we are all 100% behind these efforts. That way we will be seen as a community that has its act together and is open and ready for long-term business.