**READING SUMMARY TEMPLATE – Chapter 2**

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**CHAPTER 2: Production**

**DEFINITION for “Production”:**

**The process of using raw materials to make greater product is called production.**

**DESCRIPTION (COMPONENTS, WHAT’S INVOLVED IN PRODUCTION – MORE DETAILED EXPLANATION THAN THE DEFINITION)**

* **Polymers are created from combining two molecules. These polymers gives things different properties like stickiness and stretchier. These polymers are used to make alloys and other items.**
* **In the United States and Canada , many of our mills prefer Elemental Chlorine Free (ECF) processing, which replaces chlorine gas with chlorine derivatives, such as chlorine dioxide.**
* **In Europe, much of the paper from toilet paper to book pages is off white in color because their paper mills have switched to Totally Chlorine Free (TCF) processes, using oxygen or ozone and hydrogen peroxide instead of chlorine to bleach the paper.**
* **Many paper industries escape vapors known as Volatile Organic Compounds (VOC), which not only smog up the air, causing respiratory, allergic and immunity problems, but also drop into soil and groundwater.**

**SOME STATISTICS THAT SEEM IMPORTANT, WORTH KNOWING, AMAZING**

* **Agri-business spends nearly $2.6 billion worth of pesticides on cotton plants every year.**
* **In India, 91% of male cotton workers exposed to pesticides eight hours or more per day experienced some type of health disorder, including chromosomal aberrations, cell death and cell cycle delay.**
* **Each year, about 30 million trees are used to make books sold in the United States.**
* **Petroleum- based inks contain 30 to 35 percent Volatile Organic Compounds, soy inks range from 2 to 5 percent.**
* **In United States, the demand for chemicals for pulp and paper production has reached 20 billion tons in 2011, with the chemicals valued at $8.8 billion.**

**EYE-OPENING FACTS (WOW, I HAD NO IDEA…)**

* **Cotton plants love water – in fact it's one of the world's most heavily irrigated crops.**
* **In United States, they consume about 100 billion cans per year, or 340 per person which is almost one a day.**
* **It took the skins of three hundred sheep to print one bible book back in the old days.**
* **Perflorinated compounds (PFC), a probable cause of many cancers as well as liver and kidney damage. It is used to make stuff resist sticking and staining. They are found in microwavable pop-corn bags, Teflon pans and in some waterproof clothing and carpets.**

**KEY MESSAGES (MOST IMPORTANT TO REMEMBER)**

* **Scouring means boiling the fabric in an alkali like sodium hydroxide to remove impurities.**
* **Pulping is the process of separating the useful fibers from the unwanted parts.**

**Two main technologies used to make pulp: 1) mechanical 2) chemical.**

* **Mechanical pulping: involves chopping, grinding, or mashing the source material to separate the cellulose fibers from other compounds.**
* **Chemical pulping: takes chemical heat and pressure to separate the fibers. Its more of a widespread process.**
* **Organic means they contain carbon, which means they can interact with the cells of living things in a variety of insidious ways.**
* **Pollutant means that they are toxic- disruptive to the endocrine, reproductive ad immune systems and also a source of neurobehavioral disorders.**